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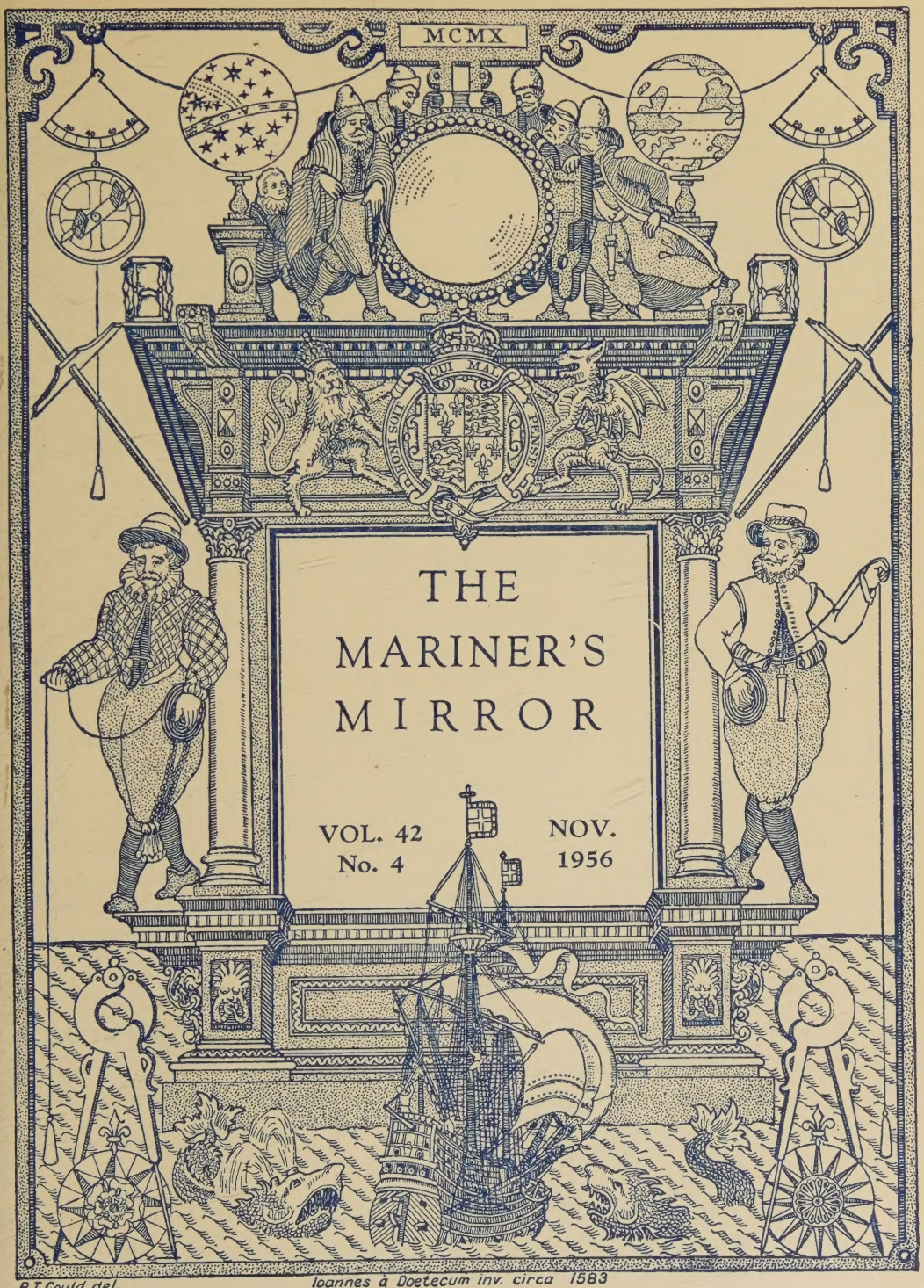

THE MARINER'S MIRROR

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No. 4 1956

R.T. Gould del. Ioannes à Doetecum inv. circa 1583

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The aim of the Society being to arrive at true conclusions through free discussion, it is distinctly to be understood that the Editor is not held responsible for statements made in the *Journal*.

Contributions and correspondence should be addressed to G. R. G. WORCESTER, ESQ., *Penny Cottage, Pound Lane, Windlesham, Surrey*. All articles, notes, queries, answers and reviews of books should be typed, on one side of the paper, preferably quarto, with double-spacing and with a wide margin. The name and address of the author must be given on the last page. As a general rule, the length of an article should not exceed 10,000 words and, owing to the high costs of production, photographs and line drawings to illustrate contributions must be restricted to a minimum.

Names of ships should be underlined to denote *italics*, and not written within inverted commas.

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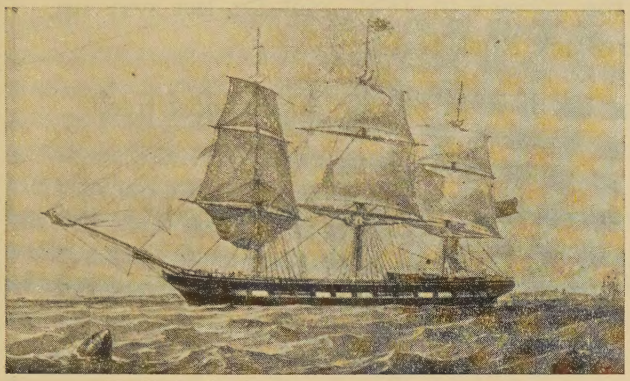

The Blackwaller *Windsor Castle* leaving Bombay 1859

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CONTENTS

PAGE

EDITORIAL NOTES 266

ARTICLES

THE *ROCCAFORTIS* OF VENICE, 1268. *By the late L. G. Carr Laughton* . 267
BOATS OF THE INDUS CIVILIZATION. *By Richard LeBaron Bowen, jr.* . 279
BARTHOLOMEW SHARP, BUCCANEER. *By Christopher Lloyd* . . . 291
FOUR SMALL CRAFT OF T'AI-WAN. *By G. R. G. Worcester* . . . 302
THE FIRST ENGLISH VOYAGES TO ICELAND. *By G. J. Marcus* . . 313

RECORDS

CONTEMPORARY PORTRAITS OF NELSON. *Contributed by Oliver Warner* . 319

NOTES

Modern Close-hauled Sailing—Checked In—Sailors' Baptism: Johanna—Some Drawings of Old Ships—Knots per Hour—Sir Home Popham, K.C.G.—The *Jenny* of Bristol, 1791–7—The Spanish Don—Beer Head Luggers; Main Mast and Foregirt—Seventeenth-century Reefs—Mahona or?—Reddingsboeje and Bathometer—The Bermuda Rig—Penthouse: Pentis 322

QUERIES

The Anchor—Condition of Dampier's Ship *Roebuck*—Insect Class Gunboats—Surgeons at Sea—Severn Barges—Preventer Braces—Cable-laid Rope 337

ANSWERS PAGE

Cutter-brig—Polacres—Paddle-wheel Craft in China—Clearing for Guam —Pompon—White Stocking Day—Evolution of the Knörr—Ship *Lintin* —Lists of Wooden Men-of-War—Bouncing Cannon Balls—Royal Navy, Retired—Unanswered Queries 339

REVIEWS

The Mariner's Mirror. General Index to Volumes 1 to 35 . . . 343
North Atlantic Seaway 344
The Roanoke Voyages, 1584–1590 345
None but the Brave 347
A Handbook of Sailing Barges 348
China Tea Clippers 348
Flags of all Nations, Vol. 1 349
The Boarding-Bridge of the Romans 350
Voyage in a Barquentine 351
The Inexhaustible Sea by Hawthorne Daniel and Francis Minot . . 352

EDITORIAL NOTES

Correction

Query No. 14 (1956) in the last issue of the *Mariner's Mirror*, after having been correctly set up in proof, was, by some inexplicable necromancy, cut neatly in two and placed half at the beginning and half at the end of the section. This oversight is greatly regretted by those concerned.

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Manuscript for press

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G. R. G. WORCESTER

THE *ROCCAFORTIS* OF VENICE, 1268

By the late L. G. Carr Laughton

Note. The following article was among the papers left by its author in a sufficiently complete state to warrant publication. It must have been written after 1934 and before 1945. The manuscript opens with three references; Jal, *Archéologie navale*, Vol. II, p. 355; Nicholas, *History of the Royal Navy*, Vol. I, p. 243; Anderson, 'Jal's "Memoire no. 7"' in *The Mariner's Mirror*, Vol. VI, p. 18. In Laughton's own words: 'Nicholas merely repeats Jal's mistakes. Anderson corrects one of them and mentions another.'

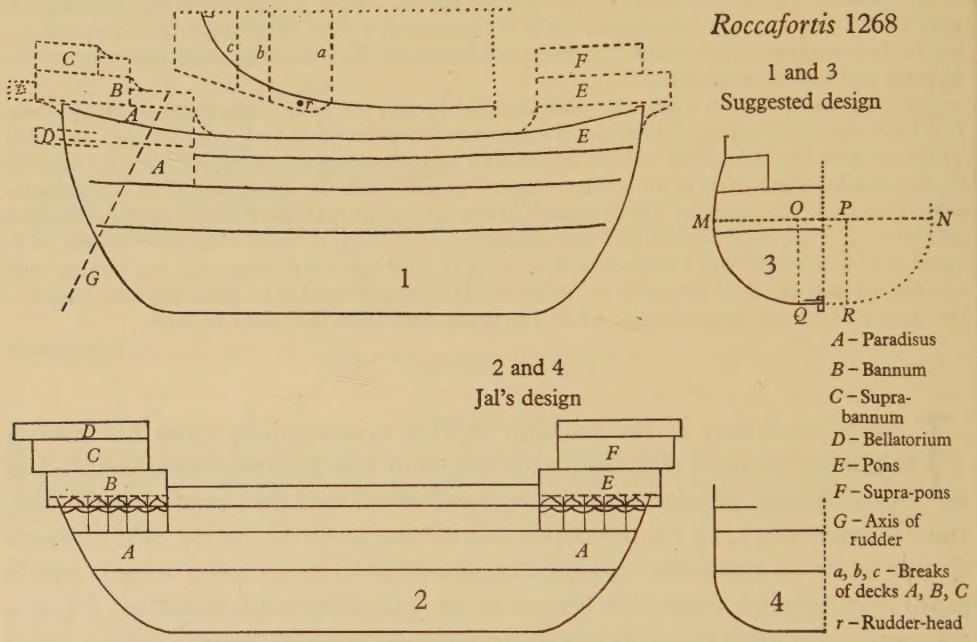
Jal's long essay, 'Sur les Vaisseaux ronds de Saint Louis', was largely devoted to a consideration of a Latin document giving dimensions of a number of ships supplied by Venice for the Crusade of 1268; of these the *Roccafortis* was the largest, and Jal endeavoured to work out both her midship section and her sheer-plan, or rather her 'inboard profile' with the disposition of its accommodation. The correction made in *The Mariner's Mirror* had to do with the midship section, in which Jal went out of his way to insist that two quarter circles of 11½ ft. radius with their centres 18 ft. apart would reconcile with a horizontal floor of 9½ ft. running 11½ ft. below the line joining their centres, whereas the floor necessary to do this would obviously have to be given the same length as the distance between those centres, 18 ft. Laughton deals with this point at once.

R. C. ANDERSON

JAL'S confusion in his midship section arises chiefly from his having taken for granted that the stated depth of the ship was measured to the breadth line. But in the earliest ship of which we have certain knowledge, the *Mary Gonson*, *c.* 1520, the depth was measured from the top of the kelson to the beam of the lower orlop (almost certainly to its lower edge), which point in a ship of about this size is some 3 ft. below the breadth. Jal also measured his depth from the base-line with which he professed (erroneously) to reconcile the curve of his bilges, this base-line being the lower edge of the timber. Thus he assumed that 11½ ft., the stated depth, represented the height from the top of the keel to the breadth, instead of that from the top of the kelson to the underside of the lower orlop beam. Apart from the fact that his bilge arcs did *not* reconcile with his floor, he should have been warned of his error by the disproportion of depth to beam. He did not know of the *Mary Gonson*, but he had had much to do with the ships of the latter part of the sixteenth century, for which approximate dimensions were available, and he must have known that then a ratio of 5 to 2 between breadth and depth was normal (though by then the lower orlop had been raised). Yet in this case he passed a ratio of 41 to 11½, more than 7 to 2, almost without comment.

It is probable that Jal was right in assuming that the midship section of the *Roccafortis* and other ships of her time was traced by the method described

by Fournier as the 'old method'. The very simplicity of this is a guarantee of its antiquity and it must certainly have been much older than Fournier suspected. We know now, indeed, that it had been superseded in important ships by a more elaborate section at the latest by 1512 and probably much before that. The somewhat slight indications of the Italian manuscript of about 1445, printed in *The Mariner's Mirror* in 1925, go to prove that it was not the section of carrack-built ships in the early part of the fifteenth century.



This simple method is as follows (Fig. 3): draw a line *MN* to scale for the breadth of your ship, bisect it and on each side of the middle point mark off a length equal to half the floor which the ship is to have. Drop perpendiculars from these two points, *O* and *P* to meet at *Q* and *R* two quadrants drawn with centres *O* and *P* and radii *OM* and *PN*. Then *QR* is the floor of the ship and *MQRN* her main section below the breadth.

In the case of the *Roccafortis MN* is 41 ft. and *QR* is $9\frac{1}{2}$ ft.; therefore *OM*, *PN* and the depth *OQ* or *PR* are all equal to $\frac{1}{2}(41 - 9\frac{1}{2})$ or $15\frac{3}{4}$ ft. If Fournier's 'old method' is used, this is the only possible value for the depth of the ship at the mould of her midship bend.

What, then, is the depth of $11\frac{1}{2}$ ft. specified in the contract? Simply the depth in hold. As the purpose of the contract was to obtain ships having room for a certain number of passengers and their stores, the object of the

survey was to determine the accommodation available in each ship and the size of the hold. From these unusual details we can attempt, as Jal did, to reconstruct the ships; but we should recognize in the first place, as Jal did not, that the 11½ ft. of depth is a stevedore's rather than a shipwright's measurement.

We know that soon after 1500 the crown of the lower orlop was at or about the load water-line. By the middle of the sixteenth century it had been raised considerably, so that gun-ports might be cut throughout its length. There is therefore no reason to suppose that before the introduction of a complete lower-deck tier of guns the lower orlop had ever been higher than it was at the beginning of Henry VIII's reign. The depth in hold was then measured from the top of the kelson to the lower edge of the orlop beam and it may be assumed that this had been the method from time immemorial. A century later, as will be remembered, the depth in hold was commonly measured from the ceiling instead of from the kelson, a change which has its significance.

The reason for this change was almost certainly the great increase in the scantling of the kelson, which in all early ships seems to have been very small. For instance, in the Woolwich ship (which I believe to be the *Henry Grace à Dieu*) it is only 10 in. deep, of which 4 in. is scored over the floor timbers, leaving only 3 in. to rise above the 3 in. ceiling. In fact, in early ships the kelson had not forgotten that it was originally no more than the middle locking floor-board of an open boat; I think it may be accepted that in the thirteenth century, as in the early sixteenth, it did not rise more than 2 or 3 in. above the ceiling. In the *Grace Dieu* of 1418 the rise above the ceiling was about 2 in. By 1600 the kelson had grown to be a heavy timber; in the *Nonsuch* of 1603, for example, a ship of only 34 ft. beam it was 15 in. up and down by 19 in. wide, more than twice as great in section as that of the *Henry Grace à Dieu*, a ship three times her size.

In the case of the *Roccafortis*, if we allow 1 ft. 3 in. for the depth of the timber and kelson above the top of the keel, we will almost certainly be near to actual practice. There is no evidence to show that Mediterranean ships used a standing strake at any time and it is assumed—more doubtfully—that the floor was without deadrise. Thus the flat of the floor, the base-line of the mould, is assumed to have lain immediately on the upper side of the keel. The keel is taken to have been 18 in. square, but this does not affect the drawing of the section. The plank in such a ship would probably be 4 in. thick, and it is not certain whether the given breadth of the ship was the moulded breadth or the breadth outside the planking. It seems more probable that 41 ft. was the moulded breadth and the section has been drawn on that assumption.

A valuable check on the reconstruction is found in Fournier's statement that the top of the side should lie at a height above the breadth line equal to the moulded depth. Jal entirely neglected this, so that the height of his section satisfied him, when he had merely added together the depth in hold and the height of the several decks: he took no account of the depth of the floor timber and of the kelson, nor of the beams and plank of the decks and gangways, nor of the probable camber of the decks. The depth of the ship from the top of the keel to the breadth line being 15 ft. 9 in., the moulded depth to the top of the side would be 31 ft. 6 in., to which the depth of the keel, 1 ft. 6 in., has to be added to obtain the total depth, 33 ft. Jal's total is only 27 ft., which, had he allowed for the keel, would have become about 28½ ft. We have thus 4½ ft. to account for, if the ship is to be made to comply with Fournier's rule. This at least may be advanced: that if we accept Fournier's rule for the tracing of the mould below water, we cannot consistently neglect it when we come to draw the section of the ship above water.

Of this 4½ ft. we have already allowed 1 ft. 3 in. for the depth of the floor timber and kelson and this leaves us with 3 ft. 3 in. for disposal. This extra height can be accounted for by deciding that it represents the depth of the beams and thickness of deck planking. It may be assumed that for the gangways (corridors), which would be laid on ledges instead of beams, much less need be allowed than for a deck. Thus, if for each of the orlops we allow 17 in. (15 in. beam and 2 in. plank), for the gangway we need only allow 8 in., thus making a total depth of 42 in. This brings the total height of the ship, if marked off on a perpendicular raised upon the keel, to 33 ft. 3 in., i.e. 3 in. more than Fournier's rule demands. Of course in calculations of this sort one cannot insist upon a discrepancy of a few inches more or less, but the consideration that the assumptions made give a result approaching so nearly to that which was desired argues strongly that the principle acted upon is the right one; or, in other words, that in the contract the height between decks was measured from plank to beam.

There is, however, a small correction to be made, the effect of which is to bring the top of the side 5 in. below the desired 33 ft. mark instead of 3 in. above it. We do not know how wide the gangways were: Jal postulates 8 ft., which is probably near enough to the truth. What matters more here is that they started from the side of the ship and, if they were 8 ft. wide, did not approach within 10 ft. of the centre line. They could not, therefore, be measured on the perpendicular from the keel, but must, like the height of the rail above them, have been measured at the side of the ship. Now, if they were laid with a camber corresponding to that of the orlops, though their planking would have arisen to a height of 29 ft. 9 in. above the ground line

at the centre line, yet there is a camber of 8 in. to be allowed for; which means that the height of the plank against the ship's side would be 29 ft. 1 in. and the height of the rail raised 3 ft. 6 in. above it would be 32 ft. 7 in. instead of 33 ft. 3 in. on the centre line.

It might well be argued that 5 in. is so small a departure from the rule that no notice need be taken of it. In practice that was very likely the case; and as this is a survey of an actual ship, it does not seem necessary to labour the point further. If, however, it should be thought that the discrepancy, small as it is, ought to be accounted for, it is easy to point out *three* ways in which it may have arisen:

(1) If we distribute the 5 in. between the floor timber, the kelson, the beams and the deck planks, we can at once dispose of it without making the scantlings appear impossibly heavy. By adding 2 in. to the floor timber, 1 in. to the kelson and 1 in. to the combined beam and plank of each orlop the thing is done.

(2) It might also be assumed that the decks were laid practically without camber; for in fact we have no direct knowledge of the medieval methods of laying decks. It is conceivable, though to me it seems unlikely, that they may have been laid with a camber of no more than 4 in., which again would cancel the discrepancy of 5 in.

(3) It is also possible that the scantlings and camber should be allowed to stand as stated and that the 5 in. should be accounted for by a deadrise of the floor timber. The only vessel from which we can at present argue with any certainty is the Woolwich ship, which was very round-bottomed and almost certainly not built by the Fournier rule and had a standing strake and a great deadrise. The *Grace Dieu* at Bursledon seems to have had some rise, but no standing strake. It seems probable that a round bottom with rising floors was a regular feature of medieval ship design.

The probable explanation is that all three of these causes contributed to the discrepancy; that some slight readjustment of scantlings and camber should be made and the balance of the deficit be attributed to deadrise. And there for the present the question may be left.

A few words may be added to the subject of the scantlings assumed. The keel is outside the picture and does not affect the argument. A depth of 10 in. for the floor timbers was chosen chiefly from a comparison with the *Grace Dieu*, a much bigger ship, whose timbers were an inch or two deeper; it was also remembered that in the specifications of 1590, when scantlings were growing heavier, the *Merhonour* with a breadth of 37 ft. had floor timbers 11 in. deep; while those of the *Defiance*, 32 ft. broad, were 10 in. The kelson was deduced from the very small members in both the Woolwich ship and the *Grace Dieu*, though it must be admitted that it is dangerous

to argue from clench building with carvel in such matters. I would prefer to add nothing to the scantling of either the floors or the kelson.

For the beams we are left guessing, since no early dimensions are available for them. The introduction of heavy gun armaments certainly affected practice greatly and we may be sure that the beams of medieval ships were much lighter than those of the latter part of the sixteenth century, still more so than those of the early seventeenth, when scantlings reached their maximum. Thus in 1583 we find a small Dutch ship (*M.M.* 1927, p. 273) of only 23 ft. breadth having the beams of her main orlop 1 ft. square; while in our *Lion* of 1609 on a breadth of 35 ft. the false orlop's beams were $14\frac{1}{2}$ in. square and those of the main orlop 19 in. wide by 18 in. deep. The difference between the lower beams, which had no weight of guns to carry, and those of the main orlop gives us a clue. Allowing for the earlier date it seems probable that the depth of the beams of the *Roccafortis* would be about 15 in. I have allowed only 2 in. for plank, chiefly because in the *Henry Grace à Dieu* the greatest thickness of plank on the orlops where no guns were borne was $2\frac{1}{2}$ in. and, because 2 in. deck plank was similarly used in the ships of 1590.

When we proceed to reconstruct the sheer-draught of the ship, we have few assumptions to make for the hull proper, but for the upperworks we have little evidence beyond a mere statement of the compartments into which it was divided. Fortunately we have the Peter Martyr ship (*M.M.* 1911, p. 334) to supplement the document in important details.

The midship section, which I have assumed to be at the middle point of the keel, though its exact position does not affect the argument, gives us the height of the side and of the several decks. The document itself gives us the sum of the rakes, 40 ft., and the height of the stems, $39\frac{1}{2}$ ft. It does not state what proportion of the 40 ft. went to the fore-rake and what to the after-rake, nor does it tell us whether the height of the stems is to be measured from the top or bottom of the keel. This latter is a small point and may be dismissed briefly. If the depth of the keel is to be added, the only result is to make the sheer a trifle more and add a corresponding amount of head-room in the two *paradisi* and in the room (*pons*) beneath the forecastle. It cannot be said that this extra height was not given, but only that it seems unnecessary, since the spaces in question have enough head-room already.

More or less crude representations of thirteenth-century ships are common, especially on seals; and though those of northern Europe do not help at all towards an understanding of the rig or of the cabin arrangements of the more advanced Mediterranean ships of the same period, it will probably be admitted that when they invariably show the fore- and after-rakes as equal and the two stems rising to the same height, they afford fairly good evidence of a general practice.

The rakes in my draught (Fig. 1) have therefore been made equal, of 20 ft. each, and as the height of the stems is so great in proportion to their rake, little latitude is left as to how to trace them. An arc of a circle with its centre at the height of the stems and midway between them gives a very fair curve which has to be completed by another arc of short radius reconciling it with the keel. It cannot be claimed that the stems thus drawn are exactly those which the ship had, but it is evident that they must be very like them.

The solid lines in the draught show the crown, i.e. the top of the plank amidships, of the two *coverte* or orlops. They should, strictly speaking, be an inch or two higher to correspond with the depth of 33 ft. (it will be remembered that in the section the depth worked out at 5 in. less than this), but in a small-scale drawing the difference is negligible.

It will be noticed that the rail is shown unbroken throughout its length, though in the Peter Martyr ship there is a considerable gap in it immediately before the bulkhead of the *paradisus*. Mr Nance explained this gap as being left for convenience in unshipping and stowing the rudder, which may have been the case if the rudder was to be got in on deck at sea; but the question seems to me to be still open, so I have closed the gap in the bulwarks.

When we come to the cabin spaces of the ship, we are at once in the realm of inference and conjecture. That the *bannum* was the later poop and the *supra bannum* some sort of topgallant poop is agreed, though there is very little indication of their dimensions at this date; but of the *paradisi*, the *pontes* and the *bellatorium* each presents its own crop of difficulties. The solution here offered differs from Jal's in many respects, so that the two representations (Figs. 1 and 2) look like two entirely different ships; and respect for Jal's industry and undoubted honesty makes it necessary to explain not only how, but also why, his conclusions have been rejected.

It has been noticed above that Jal vitiated his reconstruction of the midship section by neglecting to make any allowance for the various scantlings. In drawing the sheer-plan, to which he gives no sheer, so that his drawing is an arithmetical exercise rather than a draught, he makes the same mistake, though not quite to the same extent. He carries forward the errors of his section, but in adding the upper-works he does at least once allow for thickness of plank, though never for depth of beams. He makes other mistakes, the most serious of which is that he takes for granted that the height of the ship 'in capitibus columbae' (at the heads of the keel) means the height marked off on two perpendiculars raised from the ends of the keel. There is no evidence in favour of such a view; the ends of the keel itself do not seem ever to have been called its 'heads' in the southern languages any more than in English. On the other hand, Jal himself notices elsewhere (*Arch. nav.* Vol. II, p. 46) that the stems were called heads: 'Le capion (*cavo* venétien)

était la même pièce de bois que la rodde. Elle faisait le chef, *capo*, *caput*, du navire... La rodde de poupe s'appelait cavo ou capion, aussi bien que la rodde de proue.'

There are other objections to Jal's interpretation. Early specifications, when they give the rakes, usually give the height of the stem and post as well; and here, though we have the sum of the rakes, we have no other statement of the height of the stems than is contained in the phrase 'alta in capitibus columbae'. Again, as will presently appear, a height of 39½ ft. is by no means enough for the total height of the ship from the ground, considering the number of partial upper decks she had to carry. Also it is certain that the greatest height of the ship could not have fallen on the perpendiculars at the ends of the keel. Even if the *bannum* and *pontes* extended respectively as far forward and aft as these perpendiculars, it is virtually certain that the *supra bannum* and *supra pons* cannot have done so; and had they done so, we still would not have had at those points the greatest height of the ship, which necessarily continued to rise both forward and aft by the sheer of the decks, a feature of which Jal takes no account whatever. This argument may seem unnecessarily tedious, but there is so much of sterling worth in Jal that no one has the right to reject his conclusions without showing that he has examined them closely.

Nearly all early drawings of ships show an exaggerated sheer, and it is valuable to have here direct evidence of what the sheer really was. The gunwale was at a height of 33 ft. amidships and the stems rose to 39½ ft. Judging from the way in which the fore-stage of carrack-built ships was supported, it is practically certain that a fore-and-aft beam was bedded down on the top of each stem to support the poop and forecastle; some deduction must therefore be made for the mortice of the stem into this beam and we have for the sheer a matter of about 5½ or at most 6 ft., which is not excessive in a length of 110 ft. If, as seems likely, this sheer rose rather sharply towards its ends, it is possible to draw the decks (*coverte* and *corridorii*) parallel to that part of it which lies between the fore and after castles. To do so raises their ends only about 2 ft. above their height amidships and gives a probable result.

Jal's allocation of the cabin-spaces is to me incomprehensible. He puts his *paradisi* on the lower orlop, one at each end of the ship, where it rose at its extreme ends to only about 2 ft. above the waterline. Above these, between the second orlop and a deck in continuation of the *corridorii* he places two 'vides', empty spaces not available for cabins, seemingly for no other purpose than that he might discontinue the side-planking of the ship in these spaces and substitute for it an open arcading carried on stanchions, such as is seen under the castles in representations of early ships. He neglected the

essential fact, that where this arcading occurs, it is always above the hull proper and high above the water-line; whereas he put his at a height which would really be about 10 ft., but by his calculations would be only about 6½ ft. above the water-line. How long a ship so built would have lived in a seaway does not seem to have entered into his calculations.

It seems to me that in both these respects Jal was absolutely and demonstrably wrong. First, there is no evidence for placing a *paradisus* forward; still less is there justification for placing it on the lowest deck. The contracts all show that the *paradisi* were the first-class cabins of the period, occupied by the most important passengers and paid for at a much higher rate than any others. On this ground alone it is inconceivable that they should have been either directly over the hold or at the fore-end of the ship, subject to the greatest amount of noise and also the inconvenience of having to pass through the spaces occupied by crew and passengers of the baser sort in order to reach them. For these reasons it seems to me certain that both *paradisi* must have been aft, one above the other; and as there was also a poop, that they must have been below that poop.

There is no difficulty in so placing them, if we abolish Jal's absurd arcades. From the plank of the upper *coverta* to that of the deck laid over the after stem there is a height of 14 ft., which gives space for two great cabins each with a head-room of over 6 ft. under the beams. It is only necessary to assume that there was a rise of 1½ ft. from the *corridor* to the deck of the upper *paradisus*; and as everything must have a beginning, it seems to me probable that the fashion of making falls and rises in a deck may well have originated in such an arrangement. It would seem a simple matter to make a rise from the *corridorii*, which did not form a complete deck, though possibly the waist may have been planked right across for a few feet immediately before the rise, so that access to the upper *paradisus* might be had by a door facing forward, instead of by a ladder down from the deck overhead, as must otherwise have been the case. Thus we have the *paradisi* as the lineal ancestors of the two great cabins which became the captain's cabin and wardroom of eighteenth-century two-decked ships.

The *pontes* seem to me to present greater difficulty. Jal is quite possibly right in his derivation of the word, which he thinks was first applied to a partial deck projecting beyond the stem and serving as a boarding bridge. Fighting ships, in the days when the term was introduced, were oared ships and could only board the enemy end on; hence the need for such a deck. To be sure, the suggestion has to be reconciled with the use of the ram, a point which Jal overlooked; but it may be accepted at present, because it seems to be the fact that at an early date partial decks at the fore-end of the ship were in fact, for whatever reason, called *pontes*. If the original *pons* was at the

stem level, it would be quite in keeping with what we know of the extension of the use of terms (e.g. the 'half-deck') that *pons* from meaning the partial deck itself should be applied afterwards to the space immediately below it. It may therefore be assumed that this was the case and that the *pontes* were as shown on the drawing, the upper being the space on the deck above the stem, the lower, next below it, being what was called in English in Tudor times 'the deck under the forecastle'. As there is no need in this part of the ship to raise the level of the *corridorii*, I have drawn them as continued to the stem with a height beneath the ledges of $5\frac{1}{2}$ ft., but have taken for granted that the space under the forecastle was planked throughout its width. With the deck of the forecastle (the upper *pons*) laid over the stem-head, as was done with the deck of the poop, we have a head-room of $8\frac{1}{2}$ ft., including the depth of the fore-and-aft beam and ledges, in the 'deck under the forecastle'.

Judging by the head-room that was available later in this place in carrack-built ships, $8\frac{1}{2}$ ft. seems a moderate allowance; but it is so much greater than any found in other parts of the ship—probably a good foot more than was found on the lower orlop, where the beams were deep—that it demands justification.

Everything that we know of the development of ships tells us that the cables came in here and almost certainly were also bitted here. The fore-and-aft space is not great; and with the bitt beam across the deck (if, as is probable, it already existed) the way to it would be partially obstructed; so that, considering the small number of cabins it would hold and the undesirability of giving passengers the free use of an important working space, it seems most unlikely that it can have been used for their accommodation. The need for great head-room in the cable space has not been explained, but as it certainly was there in ships of later date, it is axiomatic that there was a use for it. It may be that in working the cables it was necessary for men to stand on the bitt-beam; it may also be the case that in early ships there was a windlass under the forecastle and we know that in later (and therefore almost certainly in earlier) times men jumped up on to the barrel of the windlass to insert their handspikes. Either of these reasons would serve to account for large head-room, and though at present it cannot be stated as a fact, it is probable that one or both reasons existed.

Above the stem-head come the upper *pons* and the *supra-pons*, the forecastle and topgallant forecastle. It is not likely that any great head-room was given to them and I have allowed $5\frac{1}{2}$ ft. to each, including beam and plank, this being also the height given to the *bannum* and *supra-bannum*. Jal divided his space differently, assigning more to the lower of these decks than to the upper, and it may be that he was right. It will not affect the profile of the ship if we call *B* and *E* in the draught each 6 ft. high and *C* and *F* each 5 ft. It

seemed preferable to make them equal, because in the scale of prices paid for cabins they were assessed at the same rate and one has to make what use one can of such crumbs of information as may be available. Head-room by itself did not account for the difference in the price of cabins, because those on the lower *coverta*, where head-room was greatest, were charged at the same rate as those of the *bannum* and *pons*, where almost certainly it was least; but it may be that light and fresh air already had their market value and that the abundance of them in the upper-works was considered equivalent to the more solid, but stuffy, comfort of the nether orlop.

The length of these upper decks at both ends of the ship remains uncertain, but was apparently not great. The Peter Martyr ship, evidently much smaller than the *Roccafortis*, has a short quarter-deck, on which the helmsman stands, a short poop or *bannum* upon it and on top of the *bannum* an open deck with rails. Forward she has only a very short forestage or *pons* with rails. Thus she is two decks lower than the *Roccafortis* forward and one aft. Still, the indications which she affords are valuable. She shows that almost certainly the *bannum* must always have been short, to allow room for the steerage on what we would call the quarter-deck, the deck over the upper *paradisus*. She does not help us to the length of the *supra-bannum*, but other indications of the period seem to show that it was even shorter than the poop. Whether the *supra-bannum coopertum* and *supra-pons* were decked over with a fighting position on top of them, or whether (as considering their height and later carrack usage seems more probable) they were merely covered by rafters and tilt, cannot be stated.

The uncertainty as to length is still greater at the fore-end of the ship, for there we have no question of the position of the steerage to serve as a guide. It is likely that the *pons* (*E*) and *supra-pons* (*F*) were both shorter than I have drawn them and especially that *F* was very short. I have seen no representation of this *supra-pons* and can only guess whether it stood on the fore or the after part of that deck. On the whole it seemed more reasonable to place it at the after end; I have given the *pons* a projection of 5 ft. beyond the stem and stopped the *supra-pons* short at the stem-head. This leaves a short fore-deck, which would be valuable both in working the foresail and as a look-out position.

The Peter Martyr ship shows that the poop and forecastle were still not integral parts of the ship, but were external to the hull with their sides quite independent of the sides of the ship and the framework of their decks supported not by the hull timbers and by counters, but by external brackets. It also shows very clearly one advantage of this arrangement. The quarter-deck in wake of the rudders being a couple of feet or so wider than the hull proper, the rudder-heads were brought up through the deck inside the rail.

From this we can see that the floor of the *bannum*, extending forward from the steerage, must have overlapped the hull very considerably, and that to have a cabin space half below and half above the stem-head, as Jal has drawn his *bannum*, would be quite impossible.

We have no information as to the *bellatorium* save that it projected some 4 or 5 ft. abaft the poop. I drew it first like a late Tudor stern gallery under the brackets of the counter, but on further consideration was not satisfied with this. It seems more likely that 'poop' is to be taken literally, not only on linguistic grounds, but also because the higher the gallery was placed the better its command would be. It is also an argument pointing in the same direction that the Peter Martyr ship has quarter windows to her poop, suggesting corresponding stern windows, which, in the absence of a gallery outside them, might be used by cross-bowmen. On the whole I am inclined to think that the *bellatorium* must have been abaft the poop, in the upper position indicated. It is worth noticing, as pointing in the same direction, that unless there were a door or doors in the side of the ship (for which we have no authority at this date) it would be impossible to get into a gallery placed in the lower position.

I have already mentioned the method of bringing the rudder-heads inboard. The line and length of the rudder are shown by the line *G*, which runs at an angle of about 65° from the horizontal, this being in accordance with such representations as we have, though it may be supposed that the angle of the rudder varied in different ships according to the length of the stern-rake. As to the question of unshipping it and stowing it on the bracket or stool beneath the brackets of the poop, to which Mr Nance called attention in the Peter Martyr ship, it may be noted that, when this was done, the rudder-head would project some distance before the quarter-deck and would stand out some 3 ft. from the ship's side, thus pointing away from, not towards, the gap shown in the rail of the waist. It would not be difficult to sway it from its outboard position on to the gangway; but, as the outboard position is higher than the rail, it is hard to see what need there would be to cut the rail for the purpose.

If it should be thought of interest to compare the size of this ship with that of an English Tudor merchantman, the comparison can best be made by Baker's rule, $K \times B \times D \div 100$. By this the *Roccafortis* measures 445 tons. The later English ship, with the same keel-length, would probably have a breadth of about 30 ft., the sum of her rakes the same and a depth of about 12 ft. She would measure 252 tons. These early lateeners, thanks to their great beam, were bigger ships than the shortness of their keels would suggest.

BOATS OF THE INDUS CIVILIZATION

By Richard LeBaron Bowen, jr.

FOR many years it was assumed that the great Bronze Age civilizations of the Middle East were two in number—one centred in Egypt on the Nile and the other in Mesopotamia on the Twin Rivers (Tigris and Euphrates). Archaeological work of the last several decades has now made it abundantly clear that there was a third great Bronze Age civilization centred along the Indus River in western India. This civilization has been called the 'Indus civilization' (also known as the 'Harappa civilization' after the site where it was first discovered).

Sir Mortimer Wheeler has summarized the extent of our knowledge of this civilization in a delightful little volume.[1] The Indus civilization has been provisionally dated from 2500–1500 B.C., primarily on the basis of several dozen Mesopotamian seals done in Indus style. This civilization came to an abrupt and catastrophic end about 1500 B.C., when it was apparently overrun by the Aryan invaders. Wheeler points out that the Indus civilization is too exotic to be regarded as merely a Mesopotamian colony, and he feels that it was apparently the parallel product of similar stimuli at a somewhat later date. The evidence for direct contact between the Indus civilization and Mesopotamia in pre-Sargonid times (before 2350 B.C.) is unimpressive and consists essentially of a few seals and a fragment of a hut urn.[2] In later times a sufficiently active intercourse occurred between the two civilizations to carry seals and other knick-knacks westward to Sumer, and, more rarely, Sumerian or Iranian objects eastward to the Indus.[3] Numerous examples of the pictographic script of the Indus civilization have been found, but these have remained undeciphered. The script bears no ascertainable relationship with any contemporary or near-contemporary script.

The student of marine archaeology immediately wonders whether the Indus civilization possessed boats, and, if so, whether they sailed to Mesopotamia to carry on their trade. We have it on the authority of Wheeler that there are only two boats known to be associated with the Indus civilization.[4] Both of these are from Mohenjo-daro, a site some 250 miles up from the mouth of the Indus River, and have been published by Mackay.[5] These are

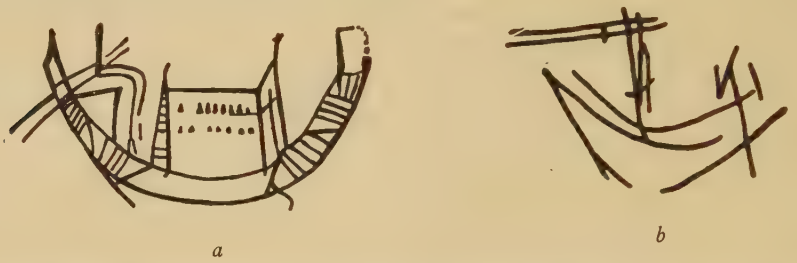
1 Sir Mortimer Wheeler, *The Indus Civilization—Suplementary Volume of The Cambridge History of India* (Cambridge University Press, 1953).

2 *Ibid.* pp. 84–7. 3 *Ibid.* p. 94. 4 *Ibid.* p. 60.

5 E. J. H. Mackay, *Further Excavations at Mohenjo-Daro* (New Delhi: Government Press, 1937–8), Vol. II, plates LXIX (fig. 4), LXXXIX (fig. A).

reproduced here in Fig. 1. One is from a seal (Fig. 1 *a*) and the other is a graffito found on a potsherd (Fig. 1 *b*).

Both representations are equally interesting. The boat from the seal (Fig. 1 *a*) is without doubt a papyrus boat, as is shown by the cross-lashings which occur at intervals along the hull. There is a hut or cabin amidships apparently made out of reeds or matting on a wood framework. A headless man sits on a seat at the stern with a steering oar—or perhaps with two steering oars, although both lines cross the near side of the boat. These features are all well known in Egyptian boats. In fact, the sharply upturned prow and stern of this boat are a characteristic feature of all archaic representations of boats. Pre-dynastic Egyptian pottery, cylinder seals of Sumer, and Early Minoan seals all show this.



a *b*

Fig. 1. Only known examples of the boats of the Indus civilization. *a*, papyrus boat shown on a seal; *b*, boat from a graffito on a potsherd. (Modified from Mackay.)

The graffito boat is definitely different from this reed boat. In the first place, it possesses a mast and a pair of yards. This is the earliest representation of a mast known in the East (excluding Egypt), since the mast is not represented in Mesopotamia until much later. While it is certainly dangerous to draw too many conclusions from such a crude drawing, a number of interesting details are evident. In the first place, a single steering oar is shown with a tiller passing through the shaft. The short vertical line aft of the steering oar is a rudder post to which the oar was tied. There are three lines representing the mast. Two of these are in the form of an A-frame, so it appears that this is at least a sheer mast. There is another line forward of the A-frame, so I am suggesting that this is the third leg of a tripod mast. The yards are shown as a pair. The Egyptians used a yard and a boom, although they did not haul both up when not in use.

The hull of this graffito boat does not have the great sheer at bow and stern that the papyrus boat does. The boat has a gentle sheer rise much the same as many Egyptian boats with their so-called 'spoon-shaped' hulls. Six Egyptian models of about 2000 B.C. with hulls similar to the Indus graffito boat and with steering oars and rudder posts have been shown by

Winlock.[1] This type of hull existed into recent times on the upper reaches of the Nile.[2]

There is a certain amount of resemblance between some modern Indian boats and these boats of the Indus civilization. H. W. Smyth has shown an illustration of a boat on the upper Indus River with a square sail confined between a yard and a boom, twice as wide as high (Fig. 2 *a*).[3] It is similar to many Egyptian sails, and is the type of sail which Queen Hatshepsut used about 1500 B.C. for an expedition down the Red Sea. This is the only illustration I have seen of the sails of modern Indus craft.

a *b*

Fig. 2. Modern Indian boats. *a*, boat of the Indus River with a sail similar to many of ancient Egypt; *b*, boat of the Ganges River showing many characteristics similar to those of the Bronze Age Indus boats and also to ancient Egypt. (After H. W. Smyth.)

On the Ganges River there are many craft which to-day bear a marked similarity to the graffito boat of the Indus civilization in respect to the shape of the hull. One of these illustrated by Smyth is reproduced here (Fig. 2 *b*). It has a hull with a gently rising sheer both fore and aft. It has a mat-covered hut or cabin in the middle. It is steered with a single steering oar with a tiller through the oar shaft. It has a square mainsail, and a topsail which is a modern addition.

There are numerous third millennium B.C. Sumerian and Akkadian inscriptions which mention maritime relations between Mesopotamia and Dilmun, Magan, and Melukhkha. It is generally agreed that Dilmun was Bahrein Island in the Persian Gulf. Most scholars feel that Magan was

1 H. E. Winlock, *Models of Daily Life in Ancient Egypt* (Cambridge: Harvard University Press, 1955).

2 J. Hornell, 'The Frameless Boats of the Middle Nile', *The Mariner's Mirror*, Vols. XXV (1939), pp. 419–32; XXVI (1940), pp. 125–44.

3 H. W. Smyth, *Mast and Sail in Europe and Asia* (Wm. Blackwood and Sons, 1929), p. 366.

Oman, while some scholars now agree that Melukhkha must have been the Indus valley. Archaeological evidence from the Indus valley shows that a few Sumerian and Iranian objects have been found in the Indus valley. However, more objects of the Indus civilization have been found in Mesopotamia. Whether this simply is the result of relatively more excavations in Mesopotamia remains to be seen. Thus we have no reason to doubt that Mesopotamian ships sailed to the Indus valley during the third millennium B.C. Whether Indus boats returned the visits is problematical.

We have many Egyptian references to voyages in the Red Sea and to the land of Punt.[1] Punt has been variously identified as South Arabia or the Somali coast of Africa. As early as the Fifth Dynasty (*c.* 2500 B.C.) Egyptian vessels were sailing on the Red Sea, and several hundred years later in the Sixth Dynasty frequent journeys were made by land or by sea to Punt. In the Middle Kingdom (*c.* 2000–1800 B.C.) the Pharaohs sent ships to Punt. In the New Kingdom we have the famous Punt expedition of Queen Hatshepsut around 1500. Three centuries later about 1200 Ramesses III sent a fleet of large ships down the Red Sea to Punt.[2]

Thus we have abundant historical evidence that the Egyptians were sailing the length of the Red Sea from 2500 to 1500 B.C. Did they ever enter the Arabian Sea and sail to the Indus valley? The historical and archaeological evidence seems to say 'No'. The Red Sea is about 1200 miles long. This is about the same as the distance from the head of the Persian Gulf to the Indus. However, from the entrance of the Red Sea to the Indus is around 1800 miles. Thus the Egyptians would have had to make a round trip of about 6000 miles to reach the Indus valley and return. There is no evidence to show that they ever did.

It seems possible that direct contact could have been made by the people of the Indus valley in Punt. Actually such a voyage from the Indus River to the mouth of the Red Sea is easier than a round trip down either the Red Sea or the Persian Gulf. In the Arabian Sea the sailor has the seasonal monsoon winds which blow along the South Arabian coast in one direction for six months, and then blow from the other direction for another six months. In the Red Sea and the Persian Gulf one does not have such easy sailing, since the winds are generally prevailing from one direction. Thus it

1 G. F. Hourani, *Arab Seafaring* (Princeton: Princeton University Press, 1951), p. 7.

2 Later the Phoenicians took over the Punt trade, for we know that Solomon (*c.* 974–932) sent Phoenician vessels down the Red Sea to Ophir, which can be equated with Punt. The association of Ophir with India is based on the mistaken identification of peacocks as one of the products brought back from Ophir (along with monkeys, sandalwood, and ivory). The word often translated 'peacock' is rendered 'baboon' by G. Lefèbvre, *Romans et contes égyptiens* (Paris, 1947), p. 38 f. Cf. also W. F. Albright, *Archaeology and the Religion of Israel* (Baltimore, 1953), p. 212, n. 16.

is perfectly possible that the Indus civilization made contact with Egyptians at Punt. But there is not one shred of evidence to substantiate it. And the Egyptians would have to have made more regular trips than we have record of.

For over fifty years students of marine archaeology have been talking about the spread of Egyptian shipbuilding techniques to India and the Far East with Egyptian migrations. Chatterton makes frequent reference to the 'wonderful influence' which Egyptian ships exercised on the rigs of the Far East.[1] Professor G. Elliot Smith pointed out many examples of 'Egyptian influence' in boats of the East.[2] Specifically the features of Eastern boats which have been attributed to ancient Egypt are the papyrus or reed boat, the steering oar, quarter rudders, both the sheer and the tripod mast, the square sail twice as wide as high, the square sail twice as high as wide, the boom at the foot of the sail, spoon-shaped hulls, traverse beams projecting through the hull sides, and the central mat-covered cabin.

James Hornell also thought that many of the features of modern Eastern boats were due to direct Egyptian introduction. In reference to the details of the boats of the Ganges, Hornell claimed that 'the fundamental identity of these characteristics with those possessed by the boats of dynastic Egypt is too striking and comprehensive to be accepted as the result of coincidence or parallel development'.[3] He also stated that the presence of the oculus in India represented 'another great link with Egypt'.[4]

No cautious historian has ever taken any stock in these claims for a direct Egyptian origin of many of the boat-building characteristics of the East, since the historical record shows that the Egyptians probably did not sail past the entrance to the Red Sea. No archaeologist ever believed such theories, for no evidence of Egyptian culture has been found in the East, outside of a few trinkets which could have passed through many hands. Further, no anthropologist was willing to admit that the Egyptians had migrated to India and the Malay Peninsula before 2000 B.C. The terminal date of 2000 B.C. was fixed by the fact that in Egypt the sheer mast was replaced by a pole mast in the Sixth Dynasty. Now it appears that the boats of the Indus civilization had most of the characteristics which we consider 'Egyptian'. Thus the occurrence of these traits on Eastern boats is certainly due to the Indians rather than the Egyptians, if we have to choose between the two.

1 E. K. Chatterton, *Sailing Ships* (London: Sidgwick and Jackson, Ltd., 1909), pp. 31–42.

2 G. E. Smith, 'Ships as Evidence of the Migrations of Early Cultures', *Journal of the Manchester Egyptian and Oriental Society*, 1916, pp. 63–102.

3 J. Hornell, *Water Transport* (Cambridge University Press, 1946), pp. 252–3.

4 *Ibid.* I have shown that the oculus was probably not introduced in the Indian Ocean until Roman times. Cf. R. LeB. Bowen, jr., 'Maritime Superstitions of the Arabs', *American Neptune*, Vol. xv (1955), pp. 5–48.

It seems that the three great Bronze Age civilizations of Egypt, Mesopotamia and India probably all possessed somewhat similar boat-building techniques. Admittedly a study of the arts and crafts of the Indus civilization fails to turn up any evidence of the direct influence of the Indus civilization by Mesopotamia, let alone Egypt. As a whole the pottery designs of the Indus civilization are without close analogy and help to isolate it rather than link it with other cultures. But on the other hand, while there is little relation in the finished form of much they made, there is an underlying basic similarity in the *way* their craftsmen worked. Thus faience glazing was known to Egypt and Mesopotamia in the fourth millennium B.C. and was used both by the Indus civilization and in Crete a millennium later.

Such would also seem to be the case with the methods of boat-building. Until we have contradictory evidence we must assume that the techniques of boat construction were the same in Mesopotamia and India as in Egypt. That is to say, the same methods of lashing reed boats together and the same methods of sewing planks were probably used. But it is to be expected that the shapes of wooden hulls and other parts of boats and their equipment would develop to different end-points in different areas. There is a definite evolution of some Egyptian boats from high bows and sterns to forms with less sheer by 1000 B.C. Such also seems to be the case for the two boats of the Indus civilization. Whether or not Egypt played any direct part in this change in India is academic. The important point is that the same forms were known in India in the Bronze Age.

It seems that all these Bronze Age plank-built boats were similar in certain general forms of construction. In the first place, based on ancient Egyptian constructions, we may suppose that they were all frameless, and that the hull was strengthened by sturdy cross beams which projected through the planking. It seems that the planking was sewn together by continuous stitching which ran along the plank edges. Further, it seems that the plank edges were held in line with wooden dowels placed in holes at each plank edge (Fig. 3A). I have described this method of sewing planks as related to the primitive boats of South Arabia.[1]

In South Arabia the dowels for holding the plank edges in line are obliquely driven trenails made of bamboo (Fig. 3D). I suggested that this method was a modification of the method used in ancient Egypt, and that it reached Arabia from India.[2] Hornell related that outside of East Africa and the Upper Nile (Fig. 3C), the only places where plank edges are

1 R. LeB. Bowen, jr., 'Primitive Watercraft of Arabia', *American Neptune*, Vol. XII (1952), pp. 186–221.

2 *Ibid.*

fastened with obliquely driven trenails to-day are the Gujerat coast of India and certain craft in northern Russia.[1] Greenhill relates that some of the boats of Karachi and many of the boats of the Indus and the marshes of Sind have their planking joined edge to edge with iron or wooden pins placed in holes in each plank (Fig. 3 B).[2] This form of trenail placed in holes in the plank edges undoubtedly is the more primitive form, for it is preserved in the Dahshur boats of ancient Egypt (Fig. 3 A). It seems that the clinker-built hull of the Vikings and other northern peoples simply uses a much improved form of the ancient Bronze Age trenail placed in plank edges. By overlapping the planks and placing rivets along the edges, the stitching could be done away with and a more satisfactory job produced (Fig. 3 E, F).

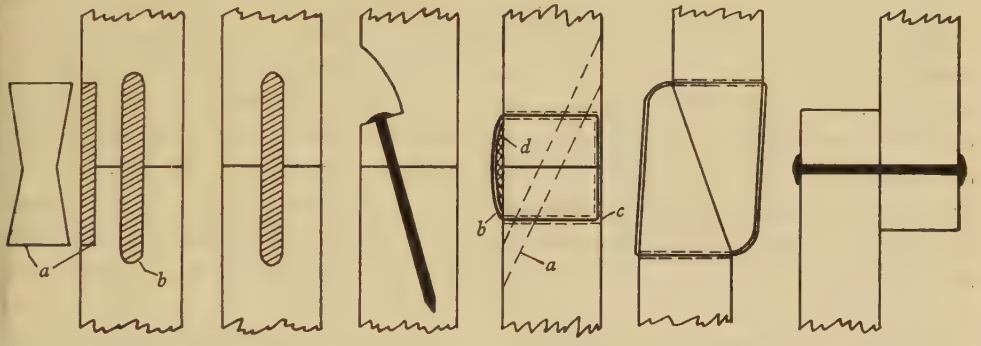


Fig. 3. Methods of connecting hull planking. A: ancient Egypt as seen in the Dahshur boats: *a*, a dove-tail tenon; *b*, a wooden dowel. B: in modern boats of the Indus River and the marshes of Sind with either a wooden or iron dowel. C: obliquely driven nails seen in Nubia and the Sudan (Egypt) to-day. D: in boats of South Arabia: *a*, a bamboo trenail; *b*, the stitch; *c*, a vertical groove on the outside between the two holes; *d*, caulking material. E: method of stitching planks together in the Als boat of Denmark which is about fourth century B.C. F: method of riveting planks together as seen in the third century A.D. Nydam boat of Denmark. (A, C, E, and F are modified from Hornell, *Water Transport*.) The outside of the hull is to the right in all examples.

I have discussed the method of continuous stitching, and suggested that it originated in either Indonesia or India from single or paired lashings at the plank edges.[3] In this I was mistaken, for the well-known Egyptian boat of Sahure of about 2600 B.C. shows continuous stitching along the side very similar to that known in the Indian Ocean.[4] Sewn boats still exist along the

1 J. Hornell, '*Mtepe* and *Dau* of the Lamu Archipelago', *The Mariner's Mirror*, Vol. XXVII (1941), p. 65.

2 B. Greenhill, 'The Karachi Fishing Boats', *The Mariner's Mirror*, Vol. 42 (1956), pp. 54–66.

3 R. LeB. Bowen, jr., *op. cit.* pp. 208–9.

4 G. S. L. Clowes, *Sailing Ships* (London: His Majesty's Stationery Office, 1932), part 1, plate I.

Upper Nile in the Sudan. One is shown in the *Encyclopedia Britannica* made of small pieces of wood fitted and sewn together in jig-saw fashion.[1] The boat has no keel and looks like a copy of a dugout. The stitching seems to differ from that universally used in the Indian Ocean, but the illustration is not large enough to tell with certainty. The stitching appears to zig-zag as if the holes were staggered and not directly opposite each other on each side of the planks. This would seem to be the same way in which Sahure's boat was sewn. In the Indian Ocean the holes are in pairs opposite each other and the stitching gives a criss-cross effect.[2] At any rate, there now seems no reason to doubt that the plank-built boats of the Bronze Age Indus civilization were sewn with continuous stitching with dowels between plank edges. But the idea probably came from Mesopotamia.

It is my feeling that inserted frames or ribs were not introduced to the Indian Ocean until Roman times, when the ships of the Roman Empire were conducting the India trade. Plank-built sewn boats without ribs existed in the Indian Ocean into recent times. Paris illustrated the *beden-seyad* of Oman in south-east Arabia as a 30 ft. sewn boat without any ribs, with only thwarts strengthening the hull.[3] On the Madras coast of India the *masula* lighters are sewn boats without ribs.[4] The idea of placing frames in boats probably originated in the Eastern Mediterranean, although we are not in a position to tell whether it was during the early Iron Age or the late Bronze Age.

This study of the Indus boats seems to indicate that many of the boat characteristics of the East, which were formerly attributed to the Egyptians, were actually spread eastward by the people of the Indus civilization. Instead of many Eastern boat techniques radiating out of Egypt or Mesopotamia, it seems that the main centre of diffusion in Bronze Age times may well have been the Indian subcontinent. Until more evidence is produced, we must assume that the Indus boats were influenced mostly by Mesopotamia. It does not seem probable that the Egyptians sailed to India. Thus it seems that the Bronze Age boats of Egypt, Mesopotamia and India must have all had certain common characteristics.

We have mentioned above that the Indus civilization came to an abrupt end about 1500 B.C., apparently because of the Aryan invasion. Archaeologists found dozens of skeletons in the streets of one of the cities where the people were apparently cut down by the invaders and left unburied. Numerous

1 *Encyclopedia Britannica* (Chicago, 1955), Vol. 1, 'Africa', plate IV, fig. 7.

2 R. LeB. Bowen, jr., *op. cit.* fig. 7.

3 F. E. Paris, *Essai sur la construction navale des peuples extra-Européens* (Paris: Bertrand, [1841]), pp. 7–8.

4 J. Hornell, *Water Transport* (Cambridge University Press, 1946), p. 236.

investigators have arrived at a date of 1500 B.C. for some of the initial migrations into the Oceanic Islands. It is interesting to wonder if perhaps some of these can be correlated with the destruction of the Indus civilization, and the resultant ethnic pressure caused in India. Professor Piggott shows that hoards of copper axes found in the Ganges Valley indicate that the area may have been colonized by refugees from the Indus Valley around 1500 B.C.[1] It is reasonable to suppose that the Ganges boats which to-day have 'Egyptian affinities' were introduced at this time by people from the Indus Valley, if they had not been introduced before. Migrations into the Ganges Valley certainly must have caused additional displacements on the east coast of India. It is interesting to note that this coast appears to be the home of the log sailing raft and that Stone Age man lived on this coast into the first millennium B.C., in view of the fact that many of the early migrations into Oceania were made on rafts by Stone Age men. Perhaps some originated in South India.

This might seem to be substantiated by the terms of certain watercraft. In referring to the boats of the east coast of India, the *Periplus of the Erythraean Sea* (written about A.D. 50) mentions 'ships of the country...and other large vessels made of single logs bound together, called *sangara*; but those which make the voyage to Chryse and to the Ganges are called *kolandia*, and are very large'.[2] Some writers have deduced from this passage that *sangara* meant double canoe. However, it seems to me that it refers to a small raft and that the *kolandia* was a much larger raft. To-day in the Laccadive Islands off South India certain fishermen use a raft known as *tarappam*, although some call it *sangadam*. The word *kolandia* is preserved as *kola maram* (flying-fish catamaran) which is still used for rafts on the east coast of India and to-day is the largest log raft. However, in India and Ceylon *sangadam*, *jangadam*, and *jangada* are general terms for any double canoe.[3] The term *jangar* is also used on the Malabar coast of India for double canoes.[4] Thus there seems to be little doubt that *sangara* was used at the start of the Christian era for certain log rafts. To-day it is used more generally to refer to double canoes.[5]

1 S. Piggott, *Prehistoric India* (Middlesex: Penguin Books, 1950), p. 238.

2 W. Schoff, *Periplus of the Erythraean Sea* (New York: Longmans, Green and Co., 1912), p. 46.

3 J. Hornell, *Water Transport* (Cambridge University Press, 1946), p. 81; 'Ethnological Significance of Indian Boat Designs', *Memoirs of the Asiatic Society of Bengal*, Vol. VII (1920), p. 187.

4 J. Taylor, *Journal of the Asiatic Society of Bengal*, January 1847, pp. 1–78.

5 Exactly the same shift in terminology has occurred with the English word 'catamaran'. This comes from the Indian word *katta maram*, which means 'tied wood'. Thus originally this word must have been borrowed to refer to the rafts of India (and other places). However, to-day in English catamaran more generally means a boat with twin hulls or the double canoe.

A term related to *sangara* turns up in Brazil as *jangada* and is used to refer to the balsa rafts of that country, but it seems probable that the term was introduced since 1500, for there is no trace of it in the Pacific. I have shown that this type of raft was probably introduced to South America from Polynesia, and that it had a sail which was of Indonesian origin.[1] However, I feel that all these rafts had an ultimate Indian origin. This would seem to be substantiated by the centreboards. All surviving sea-going rafts of the Eastern Seas had these centreboards, which usually were three in number. In the *kola maram* of the east coast of India there are two powerful centreboards brought into action and the steering oar can be considered the third. In the well-known sailing raft of Formosa there are three centreboards. There are also three centreboards used with a little-known sailing raft found in Indo-China.[2] Some of the early South American sailing rafts had three centreboards, although some later ones apparently had more.[3] All these rafts used the sails of the area in which they were found. Thus the Formosan raft had a Chinese lugsail, while the Indo-China raft had the Malayan lugsail.

Thor Heyerdahl admits that James Hornell was one of the greatest authorities on aboriginal Pacific watercraft due to a life-long research on the subject.[4] Hornell came to the conclusion that the balsa raft of South America was of Asiatic origin. However, Heyerdahl was obsessed with his idea that Polynesia was settled *only* from the Americas (from Peru and California). He rejects Hornell's hypothesis and accepts Lothrop's theory that the balsa raft with its centreboards and sail was independently invented in South America.[5] Heyerdahl states that outside of America the centreboard has been observed on aboriginal watercraft only at Formosa. While he is apparently familiar with Hornell's works, he prefers to disregard the Indian rafts with centreboards. He apparently did not know of the Indo-China sailing rafts with centreboards.

Generally speaking log rafts are never shown in Egyptian art, and I do not believe that they are known from the Nile in historic times. An exception to this is an illustration from the tomb of Amenophis II (*c.* 1500 B.C.) showing the reception of a Punt expedition on the shores of the Red Sea. There are two rafts shown (Fig. 4), and these have been attributed by most scholars as the vessels on which the Puntites themselves had carried their goods to the

1 R. LeB. Bowen, jr., 'Eastern Sail Affinities', *American Neptune*, Vol. XIII (1953), pp. 81–117.

2 P. Paris, *Esquisse d'une ethnographie navale des peuples annamites* (Rotterdam: Prince Hendrick Maritime Museum, 1955), p. 60, figs. 45–52.

3 R. LeB. Bowen, jr., *op. cit.* fig. 4.

4 T. Heyerdahl, *American Indians in the Pacific* (New York: Rand McNally and Company, 1953), p. 574.

5 *Ibid.* p. 593.

Egyptian coast.[1] Thus we have definite proof that the antiquity of the sailing raft in the Indian Ocean goes back at least to the Bronze Age.

It seems that the idea of centreboards for rafts was borrowed from the quarter rudders of plank-built boats or dug-out canoes. Many Egyptian boats show multiple steering oars at the stern, some with three oars. Sahure's boat, mentioned above, had three steering oars. There are also three steering oars shown on a Sixth Dynasty ship of *c.* 2200 B.C.[2] It seems that the same technique may have been used on the boats of Bronze Age India, although admittedly both the Indus boats show a single rudder. Evidence for this is found on some of the modern canoes of the Palk Strait of South India, which have two quarter rudders aft and a single leeboard forward.[3] We have seen that the *kola maram* has two centreboards and a steering oar. Thus the evidence seems to point to India as the home of the sailing raft with three centreboards.

Fig. 4. Rafts of Punt as shown in the tomb of Amenophis II (*c.* 1500 B.C.) carrying goods destined for Egypt. (After Säve-Söderbergh.)

There is definite evidence in the form of archaeological centreboards and pictorial evidence that the sailing raft was used in South America in pre-Christian times. But the evidence does not seem to go back further than the middle of the first millennium B.C. The earliest form of South American watercraft seems to be craft made of bundles of reeds. Some of these take rather elaborate forms. It is known in well-developed form in Chimu models and paintings *c.* 1200 B.C. from Peru, which are very similar to some of the modern Lake Titicaca reed canoes.[4]

1 T. Säve-Söderbergh, *The Navy of the Eighteenth Egyptian Dynasty* (Uppsala, 1946), p. 24, fig. 6.

2 J. Hornell, *Water Transport* (Cambridge University Press, 1946), p. 213.

3 *Ibid.* pp. 261–2.

4 C. Singer, E. J. Holmyard and A. R. Hall, *A History of Technology* (Oxford: The Clarendon Press, 1955), Vol. I, pp. 731–43.

It would seem that the reed raft or canoe must have reached South America by means of a coastwise diffusion from Asia by way of the Aleutian Islands, Alaska, and the west coast of America. It was preserved in California in historic times. A reed-bundle boat certainly never made a trip across the Pacific, or any large part of it. Whether the sheer mast and square sail came with the reed canoe from Asia is not apparent. It could have come at a later date. It seems possible that some of the reed canoes and various reed floats found in Polynesia may have spread there from South America, rather than from Asia, as has been suggested by Heyerdahl.[1]

1 T. Heyerdahl, *op. cit.* pp. 575–95.

BARTHOLOMEW SHARP, BUCCANEER

By Christopher Lloyd

THE voyage of Bartholomew Sharp (or Sharpe) in the South Seas in 1680–2 was the first occasion on which Englishmen appeared off the coasts of Peru since the days of Drake. On his return he was the first Englishman to round Cape Horn, sighting no land at all between Juan Fernandez and Barbados, a distance of nearly 10,000 miles. Apart from an achievement which puts him among our finest navigators, Sharp's voyage was of very considerable political importance. He pioneered the way for the second band of 'the brethren of the coast', who appeared in those seas between 1683 and 1685, led by Davis and Swan, with Dampier and Wafer once more on board, but this time with Ambrose Cowley as pilot. Their exploits, written up by booksellers with a verve which earned them wide popularity, were the premises on which were founded those two unlucky projects—the Darien Scheme and the South Sea Company.

The voyage itself is one of the most fully documented on record, as may be seen by a reference to the bibliographical note printed at the end of this article. Most people know of it in Basil Ringrose's account which appears as part of the later editions of Esquemeling's classic *Bucaniers of America*. There are other printed accounts, but all of them suffer in comparison with the many MS. copies on which they are based, because the hands of early editors were bound by reasons of state. From a literary point of view the printed versions are superior: nothing, for example, could be better than the opening of the Ayres account: 'That which often Spurs men on to the undertaking of the most difficult Adventures is the sacred hunger of Gold; and 'twas Gold was the bait that tempted a Pack of merry Boys of us, near Three Hundred in Number, being all Souldiers of Fortune, under Command (by our Election) of Captain John Coxon, to list ourselves in the Service of one of the Richest West Indian Monarchs, the Emperor of Darien' —an escaped slave named Andreas. But in only one printed account, that signed W.D. in the second edition of Esquemeling (1684), is there any mention of 'the great book of sea charts and maps' captured from the Spaniards and intended for the use of those who wished to break the Spanish monopoly in those seas. This account was evidently too outspoken for the authorities, so it was suppressed in favour of the more detailed but less candid account of 'the ingenious Mr Ringrose'. Besides mentioning the maps, 'the printing whereof is severely prohibited lest other nations should get into

those seas', W.D.'s statement that Sharp discovered 'that there is no such continent as Terra Australis Incognita, as is named and described in all the Ancient Maps', is also suppressed, as is the sad story of how the buccaneers mistook for lead the silver ingots found on board the same ship, the *Santo Rosario*, which they captured on 29 July 1681. Only a part of one ingot was brought home, where it was sold for £75, the rest having been thrown overboard.

According to Ringrose, the most remarkable capture on board that ship was 'the most beautiful woman I ever saw in all the South Seas'. Sharp's manuscript explains why this episode was more important than that interesting fact suggests:

> In this prize I took a Spanish maunuscript of a prodigious value—it describes all the ports, roads, harbours, bayes, Sands, rocks and riseing of the land and instructions how to work the ship into any port or harbour between the latt. of 17d.15″ N to 57.S Latt.—they are going to throw it overboard but by good luck I Saved it—the Spaniards cryed out when I gott the book (farewell South Seas now)—allso I took in this prize another Jewell viz. a young lady about 18 years of age—her name was Dona Jowna Constantz—a very comely creature—her husbands name was Don Juan etc. The ship was called the Rosario.

Since the object of the present article is to discover what happened to Sharp after the voyage was over, a brief summary of his early career must suffice. He first appears in the official documents as 'Batharpe', i.e. Barth. Sharpe, when, on 18 October 1679, it is reported that he and Coxon have captured 500 chests of indigo, besides much cocoa and plate.[1] Later that year he and Coxon led a large party of buccaneers to the sack of Portobello, which had been looted a few years before by Morgan, now the respectable deputy governor of Jamaica. The party then proceeded, in Morgan's footsteps, to cross the isthmus of Darien in order to attack Panama. The attack failed and Coxon with fifty others returned across the isthmus, leaving Sawkins in command. Coxon tried to persuade his friend Sharp to join him, 'but I would by no means condescend to so base and dirty an action'. Shortly afterwards Sawkins was killed and a further seventy-five returned. On 6 June 1680, Sharp, now in command, stood south with the remainder in two ships, the *Trinidad* of 400 tons and the little *Mayflower*. Among the crew of 146 men no less than five besides himself kept journals—Dampier, Wafer, W.D., Ringrose and John Cox, whom Sharp put in command of the consort until she was sunk, and who later engineered a mutiny against him by placing a certain Watling in command. On Watling's death Sharp resumed the command to the annoyance of a further forty-five men, who on 17 April decided to return overland. This party included Dampier, Wafer and Cook, who began the second South Sea expedition two years later.

1 C.S.P. Col. 1677/81, no. 1150.

Ringrose confesses that he would have liked to go too, but feared the Darien Indians. Because Wafer and Dampier quarrelled with Sharp, 'in whom we experienced neither Courage nor Conduct', subsequent writers have followed them in their opinion of his character. The many testimonials to his virtues in Ringrose's narrative have also to be discounted because they do not appear in the original manuscript. This, for example, does not include the handsome tribute to Sharp which runs in the printed version: 'a man of undaunted courage, and of an excellent conduct, not fearing in the least to look an insulting enemy in the face, and a person who knew both the theory and practical parts of navigation as well as most do'. In the copy which the printer evidently used, and which does not mention Ringrose on the title page, this appears as 'Capt. Sharpe was of undaunted courage, a man of excellent conduct, not fearing to look the insulting enemy in the face and one that hath both the theorique and pratique of Navigation as well as most men have it'.[1] The interpolator was certainly William Hack the copyist, not Sharp himself, and it is perfectly justified because the voyage only prospered under Sharp's leadership; indeed, had it not been for his skill as a navigator none would have returned to tell the tale.

He was intelligent enough to realize that the charts taken out of the *Rosario* had made his fortune. So on 29 August, at Juan Fernandez, he decided to return through the straits of Magellan. 'Prodigious cold' weather prevented them from finding the entrance to the straits, so that on 15 November they were the first Englishmen to double Cape Horn. No mention is made of that name, but the following latitudes are given—15 Nov.: 58°13′; 17 Nov.: 58°15′ (Ringrose gives 58°25′ and 58° 23′ respectively).

Without sighting any land on their way north they made a remarkable landfall at Barbados on 28 January 1682. It is in the description of subsequent events that the MSS. differ considerably—for obvious reasons. The Governor of Jamaica was at that moment making a drive to suppress the buccaneers and Sharp and his men had very guilty consciences. 'In the morning about 6 of the clock', writes Sharp, 'I made the island of Barbados—it bore SW distant about 4 leagues—and I stood in to the Spikes and the first boat we spoke with was the *Richmond*'s barge, which made us Bare up for the Island of Nevis, not staying for refreshment, and from Nevis we came passengers in 2 ships from England, one of which was commanded by Capt. Charles Howard, and the other by Mr Porteen, and in safety we all landed at Dartmouth. Laus Deo.' Ringrose adds that the frigate's men 'told us of peace at home, but would not come on board us, though often invited thereto. Neither dared we be so bold as to put in there at Barbados;

1 Hack's copy, B.Mus. Sloane 48, compared with Ringrose's original, Sloane 3820.

for hearing of a frigate lying there we feared lest the said frigate should seize us for privateers, and for having acted in all our voyage without commission. Thus we stood away thence for the Island of Antigua.' After their long voyage they were so short of food that they were on the point of eating 'a little Spanish shock-dog', but were saved by the hospitality of the people of Antigua. The Governor, however, refused to see them, although, says W.D., 'we sent a present of jewels to the Governor's lady'. It was therefore decided to divide what little there remained of the loot and each one shifted for himself. According to Cox, he, Ringrose and Sharp 'and most of the officers came for England to give the King an account of our Discoveries'. Others made their way to Jamaica, where we know from a letter by Morgan, dated 8 March, that they were arrested and one of them hanged—'he is prooved a bloody and notorious villain and fit to make an example'. In view of what Morgan admits to have been a remarkable voyage, and because this notoriously bloodthirsty character now states that 'I abhor bloodshed', the rest were allowed to escape. Meanwhile he warns the Secretary of State that Sharp and his companions are on their way to England.[1]

They landed on 26 March 1682 in what we may presume was an apprehensive frame of mind. However, the example of Morgan was ever before Sharp's eyes. Ten years previously the king had approved his exploits by knighting him and bringing legal proceedings against him to an abrupt conclusion. Much the same thing happened to Sharp. He must have visited the Admiralty, since his journal was deposited there, and he certainly got into touch with Hack and other 'gentlemen' of Wapping who, though possibly ex-buccaneers themselves, now settled down to a respectable business of copying and later publishing buccaneer journals. In October, Sharp presented the king with a beautiful copy of the Spanish charts now entitled *A Wagoner of the Great South Sea*, the text translated by Phillip Dassigny and the maps decorated by William Hack.[2]

It was this magnificent volume which bought Sharp his pardon, for meanwhile proceedings against him for piracy had been started at the instigation of the Spanish Ambassador.[3] On 19 May, at the Court of Admiralty sitting at the Marshalsea, there took place 'the examination of Bartholomew Sharp lodging with Captain Peadly (?) near the Tower, formerly living in Jamaica, born in the parish of Stepney in the County of Middlesex, mariner, aged about 32 years'. The proceedings are reminiscent of the early chapters of

1 Unless otherwise stated, all subsequent quotations are from documents listed in C.S.P. Col. 1681/5 and 1685/8.

2 See E. Lynam, 'Hack and the S. Sea Buccaneers', in *The Mapmaker's Art* (1953), and R. A. Skelton, 'George III's Maritime Collection', in *British Museum Quarterly*, 1953.

3 Proceedings in H.C.A. 1/51.

Treasure Island. Sharp's servant, a boy of sixteen named Calderón whom he had taken prisoner out of the *Rosario*, gave evidence that the ship had been seized piratically, her captain killed and others tortured to reveal the whereabouts of the silver she was supposed to be carrying. She was plundered of wine and brandy and silver, but neither in this deposition nor in any of the others is there any mention of the charts taken out of her as described so unwisely by W.D., now revealed as William Dick. Though Dick, together with Cox, Williams and Scot, stood his trial along with Sharp (the rest of the gang went underground as long as the examination lasted), there is no deposition signed by him. His printed version of the trial follows the evidence fairly well, though one cannot identify the two negroes who he said 'turned Cat in the Pan, and had a spleen against Capt. Sharp'. The Spanish boy's evidence is the only one which carries any weight, especially as he claims to have overheard talk that Sharp 'was endeavouring to get another ship to go to America upon the same account'—which is precisely what Sharp did.

The other hostile witness was Thomas Camp of Stepney, whose friend was the landlord of the Anchor tavern. This man told him that he had a lodger calling himself Sharp who he understood had been a pirate for sixteen years, 'that he had robbed all nations, but especially the King of Spain', and 'had often expressed himself to the following effect, viz. that he had lived a wicked course of life abroad and thought he would never die a natural death; that he came home to sue out his pardon, which he had no great hopes to obtain, and if he did not, that he would return again to the West Indies, or words to that effect'. Asked what money the said Sharp possessed, the landlord darkly hinted at 'some thousands of pounds, several portmanteaux of gold and silver, coined and uncoined'.

Of course Sharp and his friends had no difficulty in denying this gossip and they were allowed to go free on a plea of self-defence, since they claimed that the Spaniards fired first and that they were forced to take some wine and victuals out of the ship because they were starving.

Instead of being hanged as a pirate Sharp was given a captain's commission in the Navy on 25 November and appointed to the command of the *Bonetta* sloop of 57 tons, then lying at Deptford. In the same List of Ships in Commission for December the man who was to become his arch-enemy, Captain St Lo, was appointed to the command of the *Dartmouth* frigate.[1] In March 1683 the *Bonetta* is shown as still at Deptford 'going to the West Indies'. No list exists for April, but in May her captain is no longer Barth. Sharp but Edward Stanley. From the latter's journal we know that she sailed from Portsmouth on 13 April with orders to search for a Spanish

1 P.R.O. Adm 8/1.

treasure ship wrecked off Hispaniola. Stanley searched in vain for three years, when another expedition promoted by the Duke of Albemarle and commanded by William Phips (later Governor of Massachusetts) located the wreck in 1687 and took over £200,000 out of her.[1] Such was the fame of their haul that dozens of ships were soon fishing for more treasure, amongst which one would like to think Sharp's was one, but we have no evidence to that effect.

If he never sailed in the *Bonetta*, what happened to Sharp in April 1683? The answer is surely that given by his friend William Dick, now living 'at the Bankside beyond the Bear Garden'. Having 'wasted his money on good fellowship', Sharp determined to recoup his fortunes by another cruise to the westward. So 'he got together a little money, and with this bought an old boat which, as I am told, used to lie above London Bridge, for the sum of £20 sterling. Into this boat he put a small quantity of butter and cheese, and a dozen or two pieces of beef.' With a crew of sixteen men he sailed her to the Downs, where he 'clapt aboard' a French vessel, and 'upon Rumny Marsh he espied some cattle', with which he victualled her. 'Thus he is gone out of England, but whither, upon what design, or what adventures he has met withal since, I cannot tell you.' The evidence of the Ship Lists proves that this story is not the 'deliberate lie' which Dr Lynam calls it, and it is furthermore entirely in character with what we know of Sharp from other sources.

Before following him as he disappears over the western horizon, we may see how he became something of a national figure in his absence. Hack spent the next few years copying his journals and those of his companions, decorating their maps and providing booksellers with raw material to exploit the boom in this sort of literature which followed the publication of the first English translation of Esquemeling's *Bucaniers of America* in 1684. The second edition of this famous book, which appeared the same year, contains the short account by W.D. to which reference has been made. This was a real scoop for the bookseller, Crooke, because Sharp's voyage was 'one of the boldest and longest voyages that ever was attempted in the world.... What I give my reader... I received from the very hand of one of his seamen.' That same year Philip Ayres published what he called *The Journal and Adventures of Capt. Barth. Sharp*. This, he says, was 'the first that came into my hands at the time the late History of Bucaniers was published, and I finding it to be a plain journal, not unpleasant, writ by a seaman, though not learned and accurate in his style, yet one that certainly was very skilful and industrious in the Art of Sailing, who seems to me to have given a true relation of what befel them in that Expedition, most of which I heard

1 See C. H. Karraker, *The Hispaniola Treasure*, Pennsylvania University Press, 1934.

confirmed by others who were actually present in all these Adventures. For that reason I thought it might not be unacceptable to the world.' But this is really not Sharp's journal at all. It is an expanded version of that of his enemy John Cox, whom Sharp accused of being responsible for the Watling mutiny. After a page or two the 'I' of the narrative is clearly Cox, while Sharp is spoken of in the third person.

Then in 1685 comes another issue of Esquemeling, with the admirable narrative of Ringrose forming the second volume. A few years later Hack himself came into the open with his *Collection of Original Voyages* in 1699. Though Sharp's voyage is described as written by himself it is actually a heavily edited version of his manuscript journal now in the Admiralty library.

To return to Sharp's career in so far as it can be traced in the colonial records. On 6 May 1683, when he ought to have been pursuing a respectable career as a naval officer, but when in fact he went off to the West Indies on his own account, the Governor of Jamaica informed the Council that 'the rumours of Sharp's return to the South Seas have made the Viceroy of Peru arm divers ships, so that if he comes he will not escape without new miracles'. But it was not Sharp who returned to the Pacific: the band which now followed in his footsteps consisted of Cook, Edward Davis, Dampier, Wafer and Ambrose Cowley in the *Batchelor's Delight*, which they seized piratically in 1683. Meeting a certain Captain Swan, who at least began his voyage as an honest trader in a ship aptly named the *Cygnet*, Davis persuaded him to cruise in company off the coast of Chile and Peru for two years in much the same style as Sharp had adopted. It must have amused the latter to hear the vague rumours of their exploits which reached the West Indies, though none of the facts were known until Dampier published his first volume in 1697 and Hack included Cowley's journal in his collection of 1699.

By the time this party appeared in the Pacific Sharp had turned respectable once more. On 29 January 1684 Sir William Stapleton, Governor of the Leeward Islands, issued a commission to him to apprehend Indians and pirates. Sharp's old friend Coxon received a similar commission from the Governor of the Bahamas. It was a task much after their hearts, because at that date and in those waters it was difficult to say who was a pirate and who was not. Thus on 31 October we know that Sharp captured a ship which he renamed the *Josiah*, in which he remained until the end of his career at sea. When he captured her off Jamaica she was commanded by a New England skipper, Thomas Henley, and was called the *Resolution*; previously she had been a Spanish ship named *Baldivia*. According to Sharp, Henley was a pirate, and as likely as not that was the truth; but a few months later he himself was called a pirate for taking her and using her for his own ends.

An instance of these was, according to his enemies, that a year later he 'did feloniously and piratically make a violent incursion upon, robb, plunder, kill and destroy' the Spanish settlement at Campeachy at a date when the two countries were at peace. Furthermore, he was accused of 'carrying into captivity 20 of the said Spaniards and Indians', whom he sold into slavery at Bermuda. At the same time he seized a Spanish sloop 'sailing about her lawful occasions' and converted her to his own use. Sharp's answer to all this sounds weak for such a bold buccaneer: he says he fell in with some hostile French vessels who compelled him to take part in the raid on Campeachy.

Early in 1686 he appears on the right side of the law again, though he made just as many enemies by so doing. The previous autumn those of the Monmouth rebels who had been sentenced by Judge Jeffreys to the plantations began to arrive in the West Indies. Some of the more spirited among them allied themselves with the 'maroon' Indians and caused disturbances in Jamaica and Bermuda, where Sharp found himself in the *Josiah* frigate. Moreover, Bermuda had only just passed from the hands of the Company to those of the Crown, Charles II having revoked its charter in 1684. This was resented by a large section of the inhabitants and probably explains the unpopularity of the Governor, Richard Cony. In Sharp he found a loyal ally at a moment when his authority and even his personal safety were jeopardized by people reputed 'to be mutinous, turbulent, hypocritical, wholly averse to kingly government'.

On 21 January 1686 he describes Sharp as 'very zealous for the king's service, though the people have offered him large sums to desert me'. On 2 April Sharp himself reported to Sunderland, one of the Secretaries of State, that Bermuda was in a state of rebellion 'and that the people will not believe that any king but Monmouth is living'. He explains that, with the assistance of Captain Conway, he is protecting the life of the Governor. On the other hand, according to a petition of the inhabitants dated 21 April, both Sharp and Conway are pirates, Governor Cony is guilty of 'enormous crimes' and they beg to be released from his oppressive rule.

More specific charges against Sharp had been made a few weeks earlier by a certain Captain Peniston. According to him, Sharp was a proclaimed pirate, an absconding debtor, a cattle thief, a traitor who had offered his services to the French, in whose company he had burned the town of Campeachy and massacred the Spaniards in cold blood. When writs had been served on him, he had lit his pipe and wiped his breech with them. This startling indictment is endorsed by the Governor: 'Capt. Peniston delivered these articles to me, but no man had subscribed to them.' In June, however, comes another petition, that of the master of the *Bachelor's Adventure*, who complains that Sharp had seized his ship and that he was now languishing in

prison. To this Cony and Sharp repeated once more that all Bermudans were rebels and traitors.

So the quarrel continued throughout the summer until in July the Governor of Nevis, Sir John Russell, thought it was time to see what was going on. He ordered Captain St Lo to take the *Dartmouth* 'to saile to Bermuda to seize Capt. Sharp the Pirate...and find out how he came into possession of his present ship'. If his answers were not satisfactory he was to be brought back to Nevis for trial. Now St Lo, as Commander R. D. Merriman has shown,[1] was a zealous and honest naval officer, but he suffered from a somewhat truculent temperament and he evidently could not make up his mind who was on whose side in this confusing situation. Were ex-buccaneers pirates or were they the honest servants of the king? Who was in the right, the Governor who employed such men, or the local inhabitants who protested? When he arrived at Bermuda the Governor promptly refused to part with Sharp because he said he 'was forced to retain him for the King's service to suppress the rebellion here, which he did. What may be proved against him, I know not, but he has shown himself a loyal and good subject, and an extraordinary instrument in preserving the King's peace.' When St Lo reported on 10 September that he had seized Sharp, Cony sent a further testimonial to the Governor of Nevis, begging him to let Sharp off lightly if anything should be proved against him.

The position of a man of Sharp's character and antecedents was more equivocal than usual at that particular date. The stern measures against piracy and privateering instituted by the Governor of Jamaica two years previously had been dropped on the arrival of the Duke of Albemarle, Monck's ne'er-do-well son, whom James II had appointed to the post to get rid of him from the English court.[2] In October 1686, when Captain Davis was off South America, Captain Towneley was sacking Guayaquil with a thousand men, Captain Swan (with Dampier on board) was crossing the Pacific to try his luck on the other side and Captain Sharp was under arrest for piracy in the Caribbean itself, the Duke drafted a pardon for pirates which begins 'Whereas the trade of their subjects to and from our respective Dominions in America hath been much infested with Pirates and Privateers, and whereas we are willing to try if by fair means such Pirates and Privateers who are our subjects may be reduced', those who submitted within a specified

1 See his article on St Lo in *Mariner's Mirror*, 1945.

2 In 1687 Hans Sloane went out as physician to the Duke. In this way he came into possession of many of the buccaneers' MSS., most of the Hack copies having been dedicated to the Duke. On Sloane's death his collection formed one of the foundation collections of the British Museum. Morgan died of drink in 1687; Sloane describes him as 'aged about 45, lean, sallow coloured, his eyes a little yellowish... much given to drinking and sitting up late'. The Duke died from the same cause a year later.

number of months would be pardoned. It is doubtful if this proposal was ever approved, but it was a fortunate moment for Sharp to stand his trial, which he did at Nevis on 30 December 1686.

The evidence against him concerned the capture of the *Resolution* and the events at Campeachy in 1684–5. Only an Indian and a mulatto appeared as witnesses for the prosecution. 'Not being satisfied with such evidence in a matter of life and death, the Grand Jury recorded their verdict of Ignoramus and the prisoner was cleared by proclamation. But the zealous St Lo was not satisfied with these proceedings and he succeeded in having Sharp tried a second time at the Court of Admiralty at Nevis on 12 February 1687. His evidence was that he had found Sharp's commission 'of an old date and for another ship'; that his seizure of the *Resolution* was piratical because she was a New England ship and Sharp had been heard to swear that he 'would be a plague to the New England men and the Bermudans'; that he had refused to lower his topsail in salute to the *Dartmouth* and had even stolen her mainsail while in harbour. He brought into court a number of buccaneers whom he had persuaded to turn King's evidence by bribing them with pardons. One of these deposed that he had seen Sharp 'put the broad arrow upon the mainmast of the *Resolution*', that he had joined the expedition to Campeachy of his own free will, and that he had sold the slaves at Bermuda at prices ranging from £14 to £3 a head. Another, on the other hand, was of the opinion that Sharp had been compelled to go to Campeachy. Such, of course, was Sharp's defence, adding that the master of the *Resolution* was a known pirate and that therefore he had acted in accordance with his commission. That satisfied the Petty Jury and the lucky Sharp found himself once more freed by proclamation. He had the further satisfaction of seeing St Lo ordered back to England under the displeasure of the Governor of Nevis, who had complained before the second trial came on that he was disobedient and insolent, having seized Sharp's ship ('who had been most serviceable to the Governor of Bermuda') contrary to orders and that he had sailed about the place 'for recreation'. One entirely sympathizes with St Lo's complaint that he had asked the Governor of Bermuda daily to try Sharp, but he would not, and that the Governor of Nevis was 'a great favourer of privateers'. The latter had sent him to arrest Sharp, if not his ship, and when he had with great difficulty obtained witnesses against him, all the Governor did was to 'God-damn' them, and swear that the evidence of 'a crew of dogs should not take away the life of an Englishman'. As the white population of Nevis only consisted of 200 souls, it is not surprising that they acquitted this bold buccaneer at the behest of their Governor. St Lo's report to the Committee for Trade and Plantations makes it perfectly clear that the trial was rigged by the Governor.

With this second acquittal Sharp passes out of history. We only know one thing further about him, which suggests that he continued to follow in Morgan's footsteps—in 1688, says Sloane,[1] he 'commanded' the tiny island of Anguilla, or Snake Island, the northernmost of the Leeward Islands, the haunt of Captain Kidd the pirate, and the home of a sparse population living 'without Government or Religion'. It sounds a suitable home for Sharp; unfortunately the entire population was evacuated when the French attacked the place the next year.[2] As for Captain St Lo, he reaped the reward of his zeal by becoming Commissioner of Plymouth Dockyard and later Commander-in-Chief at the Nore.

Bibliographical note

A. *Manuscripts*

The following is a list of MSS. describing all or part of Sharp's voyage of 1679–82, apart from the MS. atlases and sailing directions:

By Sharp
(1) B.M. Sloane 46 A and 46 B (ded. to Albemarle, and so done before his death in 1688).
(2) Admiralty Library MS. F. 4.
(3) Marquis of Bute's MS.; see H.M.C. Appendix to 3rd Report, p. 208 (ded. to Somers, Lord Chancellor 1697–1700).
(4) Copy in Houghton Library, Harvard, described by E. Lynam in *The Mapmaker's Art.*

By Ringrose
(1) Sloane 3820 (the original journal).
(2) Sloane 48 (Hack copy ded. to Albemarle).

By John Cox
(1) Sloane 49 (ded. to Albemarle).
(2) National Maritime Museum copy, Gosse collection.

By John Coxon
(1) Sloane 2752 A—'Account of intended voyage from Jamaica to Portobello'.
(2) Sloane 2752 B—'Journal of our intended voyage into the South Sea'. This cannot be by Coxon because it describes events after his return.

B. *Printed versions of the voyage*

1684. Esquemeling's *Bucaniers of America*, second edition of the English translation, containing the short account signed W.D.
1684. *The Voyages and Adventures of Capt. Barth. Sharp and others in the South Sea: being a journal of the same.* Printed by Philip Ayres (most copies of this rare book have only P.A. on the title page). This is based on Cox's account.
1685. Second volume to Esquemeling, comprising Ringrose's narrative.
1697. William Dampier, *New Voyage Round the World.* Ed. Gray and Penzer, 1927.
1699. William Hack, *Collection of Original Voyages*, containing Sharp's narrative edited for publication.
1699. Lionel Wafer, *New Voyage and Description of the Isthmus of America.* Edited for the Hakluyt Society by L. E. Elliott Joyce in 1934.

1 Sloane, *Voyage to... Jamaica* (1707), vol. 1, p. lxxvii.
2 Sir Alan Burns, *History of the West Indies*, 1955.

FOUR SMALL CRAFT OF T'AI-WAN[1]

By G. R. G. Worcester

THE island of Formosa is one of the largest in the eastern sea; it is separated by a channel some 100 miles in width from the adjacent mainland of China. The name 'Formosa' or 'Beautiful Island' was given by the Portuguese who first visited it. The Chinese themselves call it T'ai-Wan, or Great Bay. It is about 210 miles long by about 70 miles wide. The eastern half of the island is extremely mountainous, while the western half is a fertile plain.

The history of Formosa is obscure. It appears first in Chinese annals when two expeditions were sent to the island in the time of the Sui Dynasty, A.D. 605. Being unable to conquer the island, the Chinese, rather typically, considered Formosa unworthy of being included in the Celestial Empire; thereafter the curtain falls until 1430, the date when the eunuch Wan-san Ho was driven there in a storm. The island was subsequently occupied in turn by the Japanese, Spaniards and Dutch. The rest is modern history. In 1887 it became a separate province of China; but at the close of the China-Japanese War, in 1895, it was ceded to Japan. At the end of the last war it again reverted to China and became later the headquarters of General Chiang Kai Shek.

The inhabitants of the island can be divided into three main classes, namely: the uncivilized aborigines, that is to say those unsubdued tribes who originally occupied the island; secondly, the civilized aborigines, or tribes who have submitted to the Chinese and adopted many of their habits and customs; and, finally, the Chinese, who at various times have crossed the Formosa Channel and settled among the aborigines of the island.

The aborigines appear to belong to Malay or Polynesian stock. This view is strengthened by the fact that in 1886 a cast-away canoe was picked up off Formosa in which were three men and two women. They had come from Luzon and had been blown out to sea in a gale.

It seems reasonable to suppose that from time to time, in years gone by, Malays have been driven thus to Formosa and, unable to return to their own country, in course of time settled down and intermarried with whatever race was in occupation. Certainly the prevailing winds and currents in this part of the world would greatly assist any such voyages.

1 All the plans shown in this article were made by the writer in Formosa in 1948.

This supposition, if correct, would certainly explain why many of the craft of Formosa show signs of outside influences in decoration and construction.

Sketch map of Formosa.

The rivers of Formosa are few in number; their mouths are almost invariably choked with silt, and they are very shallow and winding. The harbours on the eastern side are not numerous and not very accessible. They, too, are subject to a constant accumulation of silt and mud, which renders them shallow and cramped. Those of the west coast are, in most cases, mere roadsteads, while the sea coast, except in the extreme north, is a succession of sandbanks, reefs and shoals. It is a navigator's nightmare.

1. The Chu-p'ai

The Chu-p'ai or Tray Boat of T'ai Wan is certainly the most scientific and interesting of the many varieties of raft to be found in the Far East. This type of craft has been evolved through the centuries to overcome the unhappy navigational difficulties referred to above, especially at Takow on

the south-west coast, where steamers and even junks have to discharge their cargo in the roadstead outside.

These boats are simply small rafts, measuring 12 to 40 feet long, with a draught of a few inches, built of about a dozen large bamboo poles lashed together with the tapering ends forward. The foremost end of the raft is narrower and more upturned than the after end. The bamboos used are those of the giant bamboo (*Dendrocalamus giganteus*), known in China as Nan-Mu.

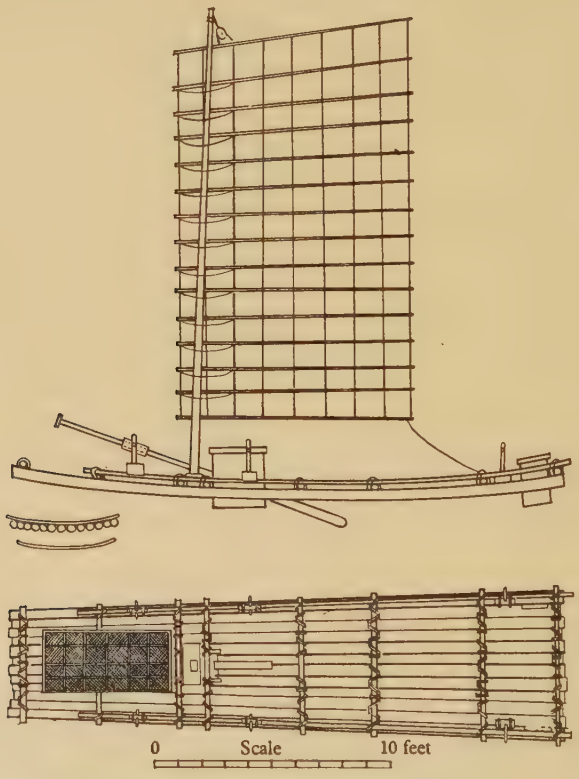


Fig. 1. The bamboo raft of T'ai Wan.

The culms grow to a height of about 60 to 80 feet with a maximum circumference of 17 inches. This species has a large core and extremely light wood. The bamboos are very carefully selected, for they must be of uniform size. To prevent cracking and to reduce weight, the siliceous skin is removed, and the nodes are hardened over a slow fire. The raftmen say that this method of treatment also increases their 'arresting power' when afloat. A vain effort to keep out the water is made by securing a small bamboo between each of the larger ones and its neighbours. Across the fore and aft poles eight slightly smaller curved poles are lashed athwart-ships at

intervals to suit the construction. The after ends of the main bamboos, which are usually, though not always, broader than those in the bow, are painted red, black and green.

These rafts are extremely fast under sail. A bamboo mast stepped in a wooden tabernacle, a masterpiece of ingenious design, carries a typical square-headed lug sail, with thirteen battens. The sheeting (omitted in the plan) is consistent with that of a triple euphroe arrangement. The halyards pass through the mast head. Chinese pattern yulohs are used to propel the raft when necessary. Crude thole pins are fitted into holders which consist of wooden blocks lashed to the outermost bamboos. A grummet secures the oar to the thole pin. No rudder is used, as the craft is steered by means of a yuloh over the quarter. Quite one of the most interesting features of the raft is that it has three removable centre boards, which are pushed down between the bamboos and moved about as required. Bow and stern are truncate: the bamboos are cut off flush except the outermost ones, which project well over the stern.

These rafts are the usual ship-to-shore light cargo carriers of the island. They are used, too, by the civilized aborigines for fishing off the south-west coast. The net used is a beach seining net measuring about 250 fathoms wing to wing, with a depth of $2\frac{1}{2}$ fathoms. It is in the form of a long rectangle, with a head rope equal in length to the foot rope. The meshes are 1 inch bar at the wings, decreasing to $\frac{1}{2}$ inch in the bunt of the net. The head rope is buoyed at regular intervals with bamboo floats 1 foot in length. Small sinkers of baked clay are attached to the footrope at uniform distances of 10 feet.

The raft begins to lay out the net at a point close to the shore, then, proceeding seaward in a half circle, finally comes in to a point as close to the beach as possible, thus forming a more or less semicircular enclosure. The net is then hauled and the fish gilled.

In addition the rafts are often used as ferry boats. When they are so employed, perhaps the most interesting feature is the accommodation provided for the convenience of the passengers. Those of the first class sit in tubs, as the bamboo deck is usually awash when under weigh. The tubs are seldom secured to the rafts, so that a sea suddenly coming on board would, and sometimes does, set them adrift. Intending passengers should, therefore, make sure that their tubs are well lashed before sailing. In the large type of raft the tub will carry as many as four passengers. The second-class passengers sit on a bamboo mat forward of the mast.

Although they are frequently swept by waves and look most frail and insecure, these magnificent little vessels are undoubtedly a close approach to perfection and the safest and most efficient type of craft in the heavy swells

and surf landings which are to be found on so much of the Formosa coast.

2. The boat of Botel Tobago

The island of Ya Ami, or as it is more often called, Botel Tobago is situated about 35 miles south-east of Formosa. It is almost completely cut off from the outside world, for it lies off the precipitous cliffs of eastern Formosa, and its nearest port of approach is Takow, a port on the west coast. Even the desperately inquisitive Japanese, beyond presenting it with the name of Kotosho, have given little more than passing notice to the island and its interesting people.[1] The population of Botel Tobago was said to be 1500 souls in 1948.

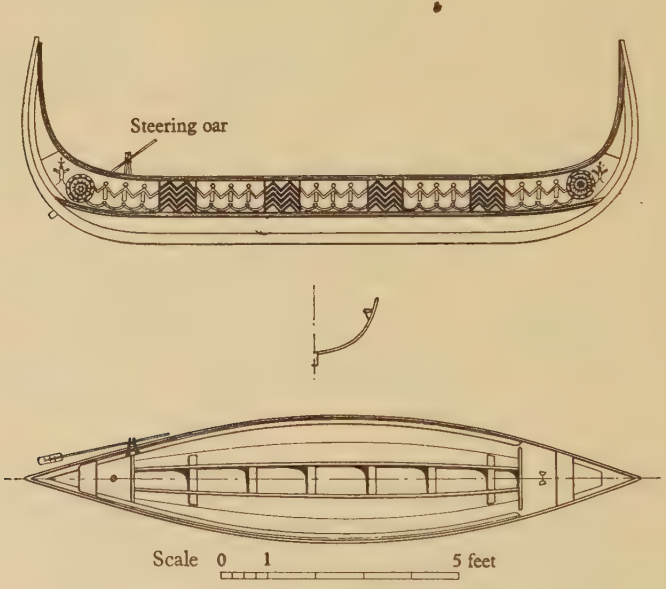


Fig. 2. The boat of Botel Tobago.

The island, which is little more than a large hill, is inhabited by a race of people which is considered by some to resemble the Amias, a tribe of aborigines living along a narrow strip of the east coast of Formosa. Japanese anthropologists consider that in their feasts, habits and superstitions they resemble the Malays and inhabitants of Polynesia. Be that as it may, their boats certainly seem, from their construction and form of decoration, to have much in common with the plank-built Mon type of canoe of New Georgia

1 Since writing the above I have been informed that a book entitled *The Illustrated Ethnography of Formosan Aborigines*, by Tadao Kano and Kokichi Segwa, is shortly to be published by the Japanese Committee for the Promotion of Anthropological Publications, Tokyo, Japan.

Island, and to a lesser degree, with the Lisi type from Malaita Island, both in the Solomon Islands. The likeness is quite remarkable and seems to be more than mere coincidence.[1]

This view is not held by Professor Heine-Geldern,[2] who, basing himself on Mr Hornell,[3] considers that, because in constructional details the Botel Tobago boat possesses important and characteristic features which it shares with certain ancient Scandinavian vessels, there has been in the distant past cultural connexion between the Baltic regions and the Western Pacific.

These authorities include also the Orembai of the Moluccas and the Mon type of canoe in their theory. They differ, however, as regards route, Heine-Geldern holding that the connexion came via the Caspian to Northern Annam, while Hornell, just as strongly, considers that the influence travelled by way of the Siberian coast.

The boats are double-ended, plank-built canoe type craft. They are, bow and stern alike, upturned vertically to form blunt points. The height of these in the smaller boats is $4\frac{1}{2}$ feet. They are ingeniously shaped from the buttress-roots at the foot of certain trees, and are scarfed into the narrow keel.

Considering their primitive habits and crude tools, these boats show an advanced technique in construction. Various sizes of these boats occur, from the small variety, illustrated in Fig. 2, which carries five men, to the large type carrying twenty or more.

Reports go to show that the saw is unknown in the island, and the planks are adzed down and carefully shaped to fit closely. The planks are held together by being pinned inwardly with trenails; no iron nails whatever are used. The frames are secured to the hull planks in a most primitive manner by means of lashings passing through the frames and secured to perforated cleats. The boat is caulked with fibre and a coarse form of putty.

Except for a long trunkway, forming a well, running practically the whole length of the boat, down the median line, the boat is decked in. Bulwarks 9 inches high serve to keep out the water in a seaway. Propulsion is by means of crude oars, shipped in double thole pins and secured by a

1 'Fishing and trading Craft of the Netherlands East Indies, New Guinea and the Solomon Islands', *B.R.* 1050 c, p. 170, cf.

2 An article 'Das Tocharerproblem und die pontische Wanderung', in *Saeculum*, Vol. II (1951), p. 225, patiently translated for me by Professor J. Kunst, who drew my attention to this important contribution.

3 'Boat construction in Scandinavia and Oceania', *MAN*, Vol. XXXVI (1936), no. 200; and 'Constructional parallels in Scandinavia and Oceanic Boat construction', *Journal of the Polynesian Society*, Vol. LIII (1944).

rattan grummet. The oarsmen sit on the thwarts with their legs down the trunkway. Sometimes, though rarely, paddles are used.

What makes these boats so extremely interesting is the characteristic scheme of decoration of the sides, which gives them a most picturesque appearance. The design is carved into the hull of the boat and then painted in bright clear blue, white and red. The carving is crudely, albeit artistically, carried out by a 1-inch blunt chisel.

The scheme of decoration is very intricate and does not seem to vary much except for the circle on each bow and stern. This multiple oculus takes the form of large discs formed by three or more red and blue concentric circles on a white ground. There are for the most part eight panels on each side of the boat. Of these two, namely, those at bow and stern, are the same. The midship panels are also identical. Each of the panels shows three human figures, presumably dancing. The figures have black heads and red bodies and legs on a white ground. At the end of each panel there is a chevron device—blue on a white ground. The top and the bottom of the panels are decorated with a geometrical design consisting of four rows of white triangles on a blue ground with a red horizontal line between each two adjacent rows. The waterline area of the boat is painted red; the bottom is usually white.

Quite obviously the design is symbolic, and probably it has a religious significance. The geometrical design, of which the main motif is the human figure, makes the scheme of decoration quite different from the Formosan or Chinese designs; and, if this were carefully studied and compared with those of Polynesia and elsewhere, it might be found sufficient to justify a more definite opinion on the origin of these interesting people.

3. The dug-out of the Sun and Moon Lake

High up on the range of the great rugged mountains, which rise 12,000 feet above the sea, live tribes of primitive people, who possessed some of the elements of civilization long before the Chinese invasion of Formosa.

The origin of these aborigines, who are reported to be cannibal in places, has so far never been satisfactorily settled; but, as previously stated, they are said somewhat to resemble the Malays and the inhabitants of Polynesia.

The Chinese from the first steadily pushed the Che Hwan, or Unripe Barbarians, back into the hills fringing the high mountains, so robbing them of their fruitful plains. In consequence of this the aborigines have always entertained a most deadly hatred of all intruders, evincing itself in their putting to death all those unfortunate enough to fall into their hands.

In their mountain fastness they remained fiercely independent, defiant

and inscrutable, living a happy care-free life by lawless predatory practices—which did not exclude head-hunting.

Such was the position until the Japanese became possessed of the island in 1896. Even they never completely succeeded in subduing these unsociable, hardy and warlike people.

The aborigines are divided into several tribes, mutually hostile and differing from one another in customs and languages. The only tribe of interest from a nautical research point of view is one known locally as the Vonum group, the most active and progressive of the head-hunting tribes. They live in the central range of mountains. Until quite recently they have had little contact with the civilized peoples; and so, it is said, they still retain many of their deplorable characteristics. The local missionaries report that they quarrel and fight on the slightest provocation, that they are great drunkards and, in secret, are still head-hunters.[1]

In the central mountains is a fine lake four miles long by two miles broad, called Tsui-sia-h'ai, or Lake of the Water Savages. This was later renamed by the Japanese Jitsugetsutan, or Lake of the Sun and Moon. Here a number of the Vonum tribe have settled, comfortably and contentedly, on the banks of the lake.

With the advent of the Americans and the refining influences of U.N.R.R.A., these one-time savage and inhuman people have become kind, gentle and law-abiding members of society, supporting themselves by agriculture, fishing and posing for photographs.

The boat used on the lake consists of a dugout of the most primitive type hollowed out from a single log. The typical dugout conforms in outline to the tree trunk from which it was made. The bottom is nearly flat; the bow and stern, which are slightly upturned, are interchangeable and have a certain amount of overhang and sometimes run to narrow extremities.

Some types are less crude than others. Such a variety is illustrated in Fig. 3, which measures 16 feet with a beam of 2 feet. The boats are propelled by one man, sometimes two, who use crude lanceolate paddles. Occasionally a short mast with a triangular sail is used.

The method of hollowing out the log is by cutting a shallow groove 6 inches or more in width throughout the length of the log. The boat is hollowed out through this groove to a uniform thickness by means of crude adzes.

Shrimp fishing is carried out to a considerable extent on the lake. In each dug-out there are two men, one of whom paddles the boat, while the

1 Perhaps the missionaries expect too high a standard. My own experience, after a stay of several weeks, in one of the lake-side villages, was that they were a most hospitable and kindly people. My hosts did not appear to cast any longing glances towards my skull.

other stands in the bow and lowers into the water several small and narrow basket traps, all attached to the same rope at intervals of 2 feet. The traps, which are of uniform size, each measure 10 inches with a width of $3\frac{1}{2}$ inches. Each basket is baited.

When the traps have remained in the water a sufficient time, they are drawn up and the captured shrimps emptied through a trap-door into a

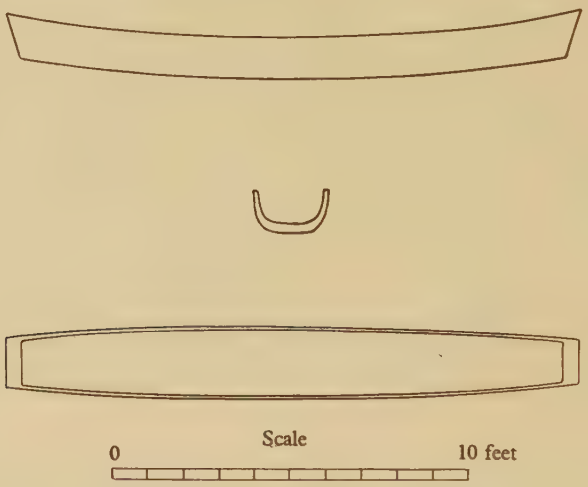


Fig. 3. The dug-out of the Sun and Moon Lake.

creel. Sometimes they are kept alive by the fishermen, as many epicures prefer eating live shrimps. They are served for the table in a vessel which contains yellow wine, strong vinegar and sesame oil. The shrimps, while under the influence of alcohol, leap about in an extraordinary manner, which, it is said, gives them a finer flavour.

It should be remembered that, in spite of the statement attributed to the Emperor Huang Ti, *c.* 2697 B.C., that 'boats were made by hollowing out logs', no dug-outs are to be found on the Chinese mainland today.

4. The Chao-T'ou

Most of the Chinese living in Formosa, somewhat naturally, come from the Fukien Province, chiefly from the towns of Amoy and Chin Chiu. The boat-builders, however, all come from Chekiang Province. This fact adequately explains why the coastal fishing craft, at least, show such a marked Ningpo-Wenchow influence. These boats follow the traditional Ningpo methods of design and construction, while the scheme of decoration follows closely the Wenchow practice.

The Chao-T'ou, or Upturned Bow, is an open, medium-sized coastal fishing boat of North Formosa. The rig is uniform and consists of the characteristic square-headed Chinese standing lug sail, carrying five battens, excluding the yard and boom.

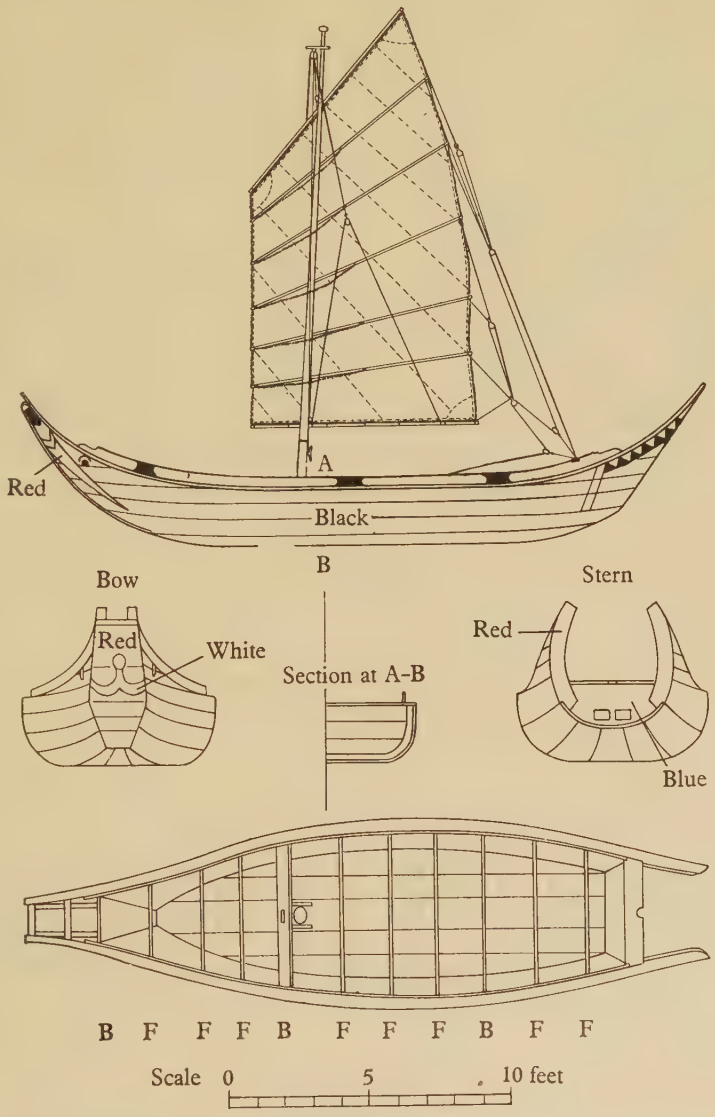


Fig. 4. The Chao-T'ou, or Upturned Bow. B, bulkhead; F, frame.

In construction and design generally this type of fishing boat resembles very closely the characteristic coastal sampan of China. The broad, flat,

decorated stern and high tapering bow, however, are uncommon distinctive characteristics.

There are eight frames and three bulkheads disposed as indicated on the plan. The foremost compartment is free flooding. The reason given for this by the junkmen is that this lessens the stresses sustained by a bluff-bowed junk when encountering head resistance from the sea. They claim that the flooding of the foremost compartment balances the water pressure outside by that inside and thereby serves to reduce some of the pounding. The boat has a nicely rounded bottom; consequently, it takes the beach easily, which is very necessary, for the west coast, where this craft normally operates, is low and shelving with extensive mud flats.

The boat is painted black throughout except for a white gunwale, with three broad black divisions, which terminate at the stern in a succession of black triangles. A small area on the quarter is painted red with a white band on the forepart. Except for the triangles the decoration of the bow is typically that of Wenchow. The upturned flare, narrowly missing the oculus, is painted red and is surmounted by a white band and a black triangle on a white ground. The upper part of the bluff bow is red, with a white chevron above. The transom is painted blue and carries one or more symbolic devices. Each of these has a meaning: a white crane for Immortality; a peach for Eternal Existence; grapes for Unbroken Prosperity; peach and lotus for Prosperity; water melon and butterfly for Long-continued Happiness; water chestnuts for Conjugal Fidelity; flower with face to the sun for Sudden Wealth; and so on.

As this is a fishing junk, the eyeball of the oculus is set low in the white, so as the better to observe the fish.

This picturesque craft was at one time common on the north-west coast of Formosa and as far south as Takou, where a smaller variety is sometimes to be found with a slightly different scheme of decoration. Unhappily, however, within the last decade Japanese fishing craft (mostly motor boats similar to those operating in the coastal waters of Japan) have been introduced into the Formosan fishing grounds. The advent of these horrible looking craft, with their superior speed and economy, has had the effect of considerably reducing the number of the interesting and seaworthy little Chao-T'ou.

THE FIRST ENGLISH VOYAGES TO ICELAND

By G. J. Marcus

A GOOD deal of obscurity surrounds the first arrival of English mariners in Iceland. According to Richard Hakluyt's *The Principal Navigations . . . of the English Nation*, the men of Blakeney fished off the coasts of Iceland in the reign of Edward III; but the statement is unsupported by any kind of evidence. It is recorded in Blomefield's *History of Iceland* that 'Robert Bacon, a mariner of this town of *Cromer*, found out *Iceland*'. Blomefield does not mention where he got this information. Professor Carus Wilson, in her well-known essay on 'The Iceland Trade', tells of 'the reopening of communication with Iceland' and implies that certain mariners from our east coast ports found their way to Iceland as early as the twelfth century. But this statement is not based on any contemporary authority.[1]

What may possibly refer to the chance arrival of Englishmen in these waters is an entry in the Icelandic annals under the year 1397 relating to a brawl in the Vestmannaeyjar (a group of islands situated off the south-west coast) with certain unnamed foreign traders, *vtlenskvm kaupmonnum*. But proof of this is still to seek. The adjective is one which might apply to Germans and Hollanders, as well as to Englishmen. An earlier entry in the annals (1337), however, relates that a crew of fifteen Scots, sailing from Bergen to Scotland, were blown off their course and arrived on the east coast of Iceland; and that of these fifteen no more than five survived.[2] It may very well be, therefore, that in some such manner as this an English crew likewise 'found out' Iceland.

In 1412 the Icelandic annals thus record the arrival of Englishmen in the country: 'A ship came from England east off Dyrhólmaey. Men rowed out to them, and they were fishermen from England. That same autumn five of the Englishmen parted from their companions and came on shore east at

1 *The Principal Navigations, Voyages, and Discoveries of the English Nation*, ed. Richard Hakluyt (1903), Vol. I, p. 303; F. Blomefield, *An Essay towards a Topographical History of the County of Norfolk* (1775), Vol. VIII, p. 104; E. M. Carus Wilson, 'The Iceland Trade', *English Trade in the Fifteenth Century*, ed. Power and Postan (1933), pp. 155–6, 160; Björn Thorsteinsson, *Siglingar til Islands frá Biskups Lynn*, pp. 44–5. The best and fullest account in English of the traffic to Iceland is Professor Carus Wilson's 'The Iceland Trade' cited above. But the substance of this essay was written as far back as 1925, and was unfortunately not revised when it was recently reprinted in the same writer's *English Merchant Venturers*. On the maritime side her essay is decidedly weak. For a serious study of the subject it is essential to consult the various papers (in Icelandic) by Björn Thorsteinsson.

2 *Islandske Annaler*, ed. Storm (1888), pp. 285, 290.

Horn out of the boat, and said they wished to buy food, and said they had been starved in the boat for many days. These five Englishmen were here in the land that winter; for the boat was gone from them when they came back, and also many who were in it. One was lodged in Thyckvabœr in Ver, another at Kirkjubœr, three to the east of Örœfi. No news came from Norway to Iceland.'[1]

In 1413 the fishermen were followed by traders. 'A merchant ship came from England to Iceland. He was called Richard who was captain, and he had the King of Norway's letters, to the effect that he might sail with his wares into his realm without toll. He landed from his ship east at Horn, and so rode to Skálaholt and back under Eyjafjoll. There he got on board his ship and sailed in her to Hafnarfjörd.' Many Icelanders came down to the shore to buy the wares in her: and shortly afterwards the ship sailed away, taking with her the five fishermen who had wintered in the island. That same summer there sailed out from England '30 fishing doggers or more'.[2] It was during this year, too, that we first hear of the lawless and predatory behaviour for which these mariners of the east coast ports were later to become notorious.[3] Some of the fishermen who had sailed round to the north of the island went ashore and took some cattle, for which (not knowing the language) they 'put down money'. But another party who had landed for the same purpose on Papey, an island off the south-east coast, went off with the cattle without paying for them.[4] Truth to tell, certain of the new arrivals were ruthless and determined rapscallions who were out to get the stockfish for which they had voyaged so far by fair means or foul. What Chaucer records of his Shipman is no less true of these east coast fishermen: 'Of nyce conscience took he no keep.'

Familiar with the courses, bearings, rocks, sands, and tidal streams of his own shores, the English mariner had now to face the dangerous navigation of the Icelandic coasts and fjords. He had to contend with the complicated conditions of the currents and tidal streams,[5] the perilous roosts off certain of the promontories (e.g. Reykjanesröst and Langanesröst), the blinding mists which cling to its east and south-east coasts, and the strong magnetic disturbances which, in so many places, rendered his compass an unsafe guide. It says a great deal for the relatively high standard of seamanship and navigation which now obtained among the mariners of the east coast ports that so

1 *Icelandic Sagas*, Vol. IV, ed. and trans. Dasent (1894), pp. 430–1. For clear evidence that these English voyages were a new venture, see *Diplomatarium Islandicum*, Vol. XVI, no. 77.

2 Dasent, *op. cit.* p. 431. For a brief account of the English fishing dogger in the later Middle Ages, see G. J. Marcus, 'The English Dogger', *The Mariner's Mirror*, Vol. XL, pp. 294–6.

3 Cf. *Islandske Annaler*, p. 208.

4 *Ibid.* p. 291.

5 Hydrographic Department, Admiralty: *Arctic Pilot*, Vol. II (1949), pp. 62 *et seq.*

large a number of fishing doggers were immediately ready to make the long voyage to Iceland in 1413. There was apparently no difficulty in procuring masters for the ocean passage; whole droves of them were forthcoming in those early years. They brought with them their native hardihood and resource, their skill and experience as sailors and fishermen, their swift adaptability to the new conditions.

How great were the perils that awaited them on the 'costes colde'[1] across the seas may be gathered from an entry in the Icelandic annals under the year 1419 (which incidentally gives also some idea of the proportions that the English traffic had by then assumed). 'Then came on Maundy Thursday such a hard gale with snow, that far and wide all round the land English ships had been wrecked, no fewer than 25. All the men were lost, but the goods and splinters of the ships were cast up everywhere. The gale came on a little before breakfast, and lasted not quite to noon.'[2]

It is of no small significance that the opening up of this English traffic to Iceland coincided with the beginning of a revolutionary advance in northern shipbuilding and sail-plan. Fairly early in the fifteenth century—at any rate on our east coast—the two-masted merchantman had begun to supplant the old, single-masted type of vessel. There is an interesting carving of such a two-master on a stall-end, formerly in St Nicholas's chapel at Lynn, and now in the Victoria and Albert Museum. The vessel depicted therein, with its finer lines and sharp, sturdy bows, is a distinct advance on the old, basin-shaped cog. Moreover, the carving shows that while the main-mast was square-rigged as of old, the mizen was fitted with a lateen, or fore and aft sail.[3]

At the same time the mariner's compass was gradually coming into use in northern waters. This was a notable improvement on the earlier and more primitive forms of the instrument, such as the needle (magnetized with a lodestone) floating on a chip or straw in a cup of water. From 1400 onwards there are numerous references to the compass in English and Hanse shipping.[4] It was apparently a prime factor in the development of the English trade to Iceland.[5]

* * * * *

In 1414 there came more merchantmen. 'Five English ships came out to Iceland, and all ran in to the Vestmannaeyjar. There came out there in a

1 *The Libelle of Englyshe Polycye*, ed. Warner (1926), p. 41.

2 Dasent, *op. cit.* p. 435. The writer was informed by the skipper of a Hull trawler that in May 1951 there was a heavy north-easterly gale, with snow, which also began in the early morning, like this Easter gale recorded in the Icelandic annals. The most dangerous gales from this quarter are those which occur on the west coast, because wind and current are there opposed.

3 See *The Mariner's Mirror*, Vol. x, pp. 95, 215; Vol. xli, p. 13.

4 See *The Mariner's Mirror*, Vol. xli, p. 69. 5 *Libelle of Englyshe Polycye, loc. cit.*

letter sent by the King of England to the commons and all the best men in the land, that trading might be allowed to his men, and especially to the crew of that ship which belonged to him.' The Icelanders then spoke of the Staple at Bergen, which was the only lawful place of traffic for foreigners. But the English would have nothing to do with that; and afterwards trading began. In the same year letters arrived from the King of Denmark forbidding all trade with foreigners, with whom it was not usual to trade. Next summer no less than six English vessels lay in the Hafnarfjörd. It is stated that one of these crews stole some stockfish at Roshvalanes and also in the Vestmannaeyjar.

In 1415 King Eirík protested to Henry V of England that, as of old, no foreigner was permitted to voyage to Iceland, the Faeroes, Shetlands, or other possessions of the Crown of Denmark, with intent to fish or to trade, under pain of death or loss of goods; and he complained of depredations committed by such intruders in the said lands.[1]

The English council, with the new French war on its hands, did not care to risk an embroilment with Denmark. In the winter of 1415 it was accordingly proclaimed in Berwick, Newcastle, Whitby, Scarborough, Hull, Grimsby, Lynn, Great Yarmouth, Gippewich, Blakeney, Dersingham, Burnham, Cromer, St Botolph's and Orwell that 'until the end of one year to come no subject shall repair to island parts of the realm of Denmark or Norway to fish or for other causes to the prejudice of the King thereof, otherwise than according to ancient custom, and especially to Iceland'. This prohibition of the Iceland traffic occasioned an indignant petition to Parliament. It was contended that since the fish had abandoned their former haunts, 'as is well known', English fishermen had searched in other seas and had found an abundance of fish off the coasts of Iceland, where they had fished for six or seven years past. The only outcome of this petition, however, was the inauspicious '*Le Roy soy avisera*'.[2]

In practice this restricted all traffic to the Staple at Bergen. The veto, however, was generally ignored; and the English continued as before to voyage to Iceland, where they sought the governor's permission to fish and to trade. Thus in the summer of 1419 the governor, Arnfinn Thorsteinsson, granted leave to the master and crew of a ship called the *Christopher*, then 'lying in Hafnarfjörd', to buy and sell in the Vestmannaeyjar and anywhere else they will, and also to fish anywhere they will. The visitors gave good prices for Iceland's principal article of export—the 'comodius stokfysshe';

1 *Diplomatarium Norvegicum*, Vol. xx, no. 733. Norway had been united to Denmark at the end of the fourteenth century.

2 *Ibid.* nos. 736–7, 742, 755; *Calendar of Close Rolls*, Henry V, Vol. I, p. 297; Bugge, *Den norske sjøfarts historie* (1923), p. 264.

the goods they brought with them were no less welcome. In 1415 the governor himself sailed to England in one of their ships, taking with him fifty lasts of stockfish, besides much coined silver. For many of the amenities of civilized life the island had been wholly dependent upon shipping from Norway. But with the continued decline of Norwegian trade and shipping communication between Norway and Iceland had become sporadic and uncertain. Sometimes a whole year would pass when 'no news from Norway to Iceland' would be recorded by the Icelandic annalist. In vain the Icelanders protested that they were not receiving the six vessels yearly that had been agreed upon when Iceland was united to Norway in 1263. It was, therefore, at an opportune moment that the English came to Iceland. From England the Icelanders got what they needed most of all: namely, corn and cloth. For years the traffic prospered in spite of the ban. The fact of the matter was that the latter could scarcely be enforced. Denmark lay afar off and her King's writ ran but lamely here.[1]

For their part the Icelanders made no bones about admitting that there had been traffic with foreigners, but reminded King Eirík that it had been promised that 'six ships should come hither from Norway every year, which has not happened for a long time, a cause from which Your Grace and our poor country has suffered most grievous harm. Therefore, trusting in God's grace and your help, we have traded with foreigners who have come hither peacefully on legitimate business, but we have punished those fishermen and owners of fishing-smacks who have robbed and caused disturbance on the sea.'[2]

No mention is made in the early stages of the English traffic to Iceland of any other mariners but those belonging to our east coast. It would appear from the anonymous *Libelle of Englyshe Polycye* that Bristol had no traffic with 'the costes colde' until about 1424.[3] The doggers, which always formed a considerable part of the English shipping bound for Iceland, were distinctively an east coast craft. It is nearly always these men of the east coast, too, who made the trouble in Iceland, of which so much is heard in the ensuing decades.

For more than sixty years the bulk of the Iceland trade remained in English hands, while our fishermen practically ousted the Icelanders from

1 *Diplomatarium Norvegicum*, Vol. xx, no. 748; *Diplomatarium Islandicum*, Vol. iv, no. 331; Schreiner, *Hanseatene og Norge i det 16 Århundre* (1941), p. 32. For information concerning the relative values of various English and Icelandic products, see *Diplomatarium Islandicum*, Vol. xvi, part 1, no. 8 *et passim*. The well-known 'stockfish tariff', set out in *ibid.*, Vol. iv, no. 337, has been ascribed to this date, 1420, but is believed by modern Icelandic historians to belong to a rather later period.

2 *Ibid.* no. 330; Knut Gjerset, *History of Iceland* (1924), p. 247.

3 *Libelle of Englyshe Polycye*, *loc. cit.*

their own fisheries. The traffic was a nursery of hardy seamen. The long ocean voyage and the intricate coastal navigation tested their skill to the uttermost. Their vessels, too, had to be strongly built and well rigged to stand the buffeting of Atlantic seas and winds. The importance of the Iceland sailings, as a factor in English maritime development, can scarcely be set too high: they were the first true ocean voyages in our history. The Iceland traffic may, in fact, be regarded as marking the halfway stage between the purely coastal navigation of Chaucer's Shipman and the transoceanic ventures of the Cabots and their successors.

RECORDS

CONTEMPORARY PORTRAITS OF NELSON

Contributed by Oliver Warner

'That foolish little fellow Nelson has sat to every painter in London', said Lord St Vincent to Lady Elizabeth Foster on Valentine's Day 1801. Alas, it was a gross exaggeration, and the following list of contemporary versions, most of which were made from the life, includes all of which I have been able to find reliable record, together with others which are undocumented, and upon which information would be welcome. Further discovery is always possible, but one or two items, purporting to be of the admiral, have been excluded, since the evidence does not seem to me conclusive.

Groups and action-pictures are excluded, and as regards pure portraits, perhaps the most notable omission is the picture at Norwich Castle by an unknown artist which, by tradition, shows Nelson when captain of the *Albemarle*. I should like to think that this was a right attribution, since it would help to span the gap between Collingwood's amateur silhouette of about 1785 and the miniature painted at Leghorn in 1795 for Lady Nelson—but I am not convinced. Posthumous versions abound. The good ones must all derive from one or other of those made from the living man.

1. By J. F. Rigaud, R.A. (1742–1810).

   Canvas 49 × 42 in. Three-quarter length. Begun in 1777, when Nelson was a lieutenant: altered 1781 (to show insignia of a post-captain and details of Fort San Juan), and possibly again later. National Maritime Museum.

   Print by R. Shipster, 1797.

   Nicolas, *Dispatches and Letters*, Vol. I, pp. 38n., 39, 41.

2. By Cuthbert Collingwood (1750–1810).

   Coloured silhouette drawn in the West Indies *c.* 1785 by the officer who afterwards became Vice-Admiral Lord Collingwood. Nelson returned the compliment in monochrome. National Maritime Museum.

3. By a Miniaturist Unknown.

   Miniature painted at Leghorn, 1795. Uniform of a post-captain. National Maritime Museum.

   Print by R. Laurie, 1797.

   E. M. Keate, *Nelson's Wife*, 1939.

   Mahan, *Life of Nelson*, ed. of 1899, p. 451.

4. By Henry Edridge, A.R.A. (1769–1821).

   Pencil and indian ink. 12 × 8¾ in. Full length, 1797. The earlier of two separate portraits by this artist. Royal Hospital School, Holbrook. See no. 22 below.

   Print by W. Evans, 1798.

   Nelson and Hamilton Papers, 1893–4, Vol. II, p. 181.

5. By L. F. Abbott (1760–1803).

   Canvas 30 × 25 in., 1797. National Portrait Gallery. Other versions, including several at the National Maritime Museum, show important variations.

   Prints by W. Barnard, 1798 and 1799; R. Earlom, 1798 and 1801; R. Shipster, 1798; J. Chapman, 1798; V. Green, 1799; W. Ridley, 1801 and 1805; R. S. Syer, 1801; and many later versions.

   Nicolas: *Dispatches and Letters*, Vol. III, p. 125.

6. By L. Gahagan (1756–1820).

Bust. Bronze gilt, 1798. Lord Cottesloe. The first of several versions by Gahagan, recorded in 1801, 1804 and later.
Print by W. Barnard, 1805.
Notes and Queries, 7th Series, Vol. IX (1890), p. 107.

7. By H. Singleton (1766–1839).

Pencil drawing, 16 × 10½ in. Half length, 1798. National Maritime Museum.
Fine mezzotint in colour by G. Keating, 1798.
The Times, 26 April 1955.

8. By D. Orme (1766–1822).

Miniature, 1798, whereabouts unknown. Orme also painted a series illustrating some of Nelson's exploits, now at Greenwich.
Print by the artist, 1798.

9. By Charles Grignion (1754–1804).

Drawing. February 1799, Palermo. Royal United Services Institution.
Lithographed, n.d.
The notes to W. T. Whitley's *Artists and Their Friends in England*, 2 vols. 1928, in the British Museum Print Room establish the date, sometimes wrongly given as 'Naples 1797'. *Country Life*, 2 August 1956.

10. By L. Guzzardi.

Canvas. Full length, 1799. National Maritime Museum. Versions at the Admiralty, National Portrait Gallery and elsewhere.
Prints by J. Young, 1800 (after a copy by Keymer) and by C. Argento.
The Times, 21 October 1930.
Notes and Queries, 7th Series, Vol. IV (1887), p. 367.

11. By an Artist Unknown.

Red and black chalk, and water colour. Oval. 9¼ × 7¼ in. Lord Mackintosh of Halifax. A hatted version (miniature) is at the Nelson Museum, Monmouth. A miniature signed F. Hill, 1800, based on these portraits, which were made in 1799 at Palermo, is in private possession.
Print by T. Burke.
Broadley and Bartelot, *Three Dorset Captains at Trafalgar*, 1906, p. 60.
Country Life, 2 August 1956.

12. By H. Füger (1751–1818).

Canvas 19 × 15½ in. Half length, 1800. National Portrait Gallery (unfinished). The only representation of Nelson in plain clothes.

13. By Matthias Ranson and Franz Thaler.

Bust 1800. Another by D. Cardossi, National Portrait Gallery, seems to derive from this, as does one by Flaxman in the United Services Club and another by Turnerelli in the Town Hall, Lewes. There is a version in coloured plaster at the Nelson Museum, Monmouth. Flaxman's statue in St Paul's (1809) seems to be based on another model. He met Nelson, but does not appear to have had sittings.

14. By J. H. Schmidt (1749–1829).

Pastel touched with gold. 12 × 9½ in. Half length, 1800. National Maritime Museum. A replica dated 1801 is in the same collection.

15. By S. de Koster (1761–1831).

Canvas 24 × 21 in. 1800. National Maritime Museum.
Prints by T. Burke, 1800; J. Stow, 1801; S. I. Neale, 1802.

16. By an Artist Unknown.

Canvas 32 × 25 in., 'Nelson wounded at the Nile'. National Maritime Museum. A dramatic picture of Nelson in his shirt, with bandaged head, wearing the medal for St Vincent. Given by him to Lady Parker.

17. By Anne Damer (1749–1828).

Bust, 1801. London: Guildhall. Mrs Damer did other versions.
Print: Anonymous, 1805; C. Knight, 1806; J. Godby, 1806.
The Mariner's Mirror, 1922, p. 35; 1949, p. 342.

18. By Matthew Keymer.

Canvas. Head and shoulders, 1801. Town Hall: Great Yarmouth. Keymer copied Guzzardi's portrait for Sir William Hamilton and painted an original in March 1801.
The Times, 21 October 1930.

19. By J. Rising (1756–1815).

Canvas 36 × 26 in. Full length, 1801. National Maritime Museum.
Print by J. Young, 1801.

20. By J. Hoppner, R.A. (1758–1810).

Canvas 92 × 58 in. Full length, 1801. St James's Palace. Other versions exist.
Prints by H. Meyer, 1805; Charles Turner, 1806; and others later.
Enamels by Henry Bone, 1805 and 1808.
Farington's *Diary*, 24 March 1802.
Mackay and Roberts, *John Hoppner*: 2 vols. 1909/14.

21. By Sir William Beechey, R.A. (1753–1835).

Canvas. Full length, 1801. St Andrews Hall, Norwich. Other versions exist.
Prints by R. Earlom, W. Say, H. R. Cook and E. Bell, 1806.
Roberts, *Sir William Beechey*, 1907.

22. By Henry Edridge, A.R.A. (1769–1821).

Drawing 12 × 8¾ in. Full length. National Portrait Gallery. Edridge's second version. See No. 4 above.
Print by A. Cardon, 1802.
Nelson and Hamilton Papers (1893–94), Vol. II, p. 181.
Farington's *Diary*, 6 August 1802.

23. By B. Papera.

Plaster bust, 18 in., 1802. Executed for Wedgwood and now at Barlaston, as is a wax model by John de Vaere.

24. By J. Downman, A.R.A. (1750–1824).

Black chalk and stump 12 × 9½ in. Half length, 1802. Agnew and Son.

25. By J. Whichelo.

Pastel. Oval 20 × 15 in. Profile, 1805. Sir William Parker. Sketched at Merton in September 1805.

26. By R. Bowyer (1758–1834).

Miniature. Whereabouts unknown.
Print by W. Bromley, 1809. *Quarterly Review*, February 1880.

27. By A. W. Devis (1763–1822).

Canvas. Head and shoulders, 1805. National Maritime Museum. Versions elsewhere. This is posthumous, but it was sketched in the *Victory* before Nelson's burial.
Print by E. Scriven, 1806.

28. By an Artist Unknown.

Canvas 27 × 23½ in. Hat without shade. No decorations. National Maritime Museum.

29. By an Unknown Sculptor.

Terra Cotta bust 15 in. high. National Maritime Museum. There is a bronze version of this outstanding representation in the same collection. It is unlikely to be earlier than 1802. Probably used as a model for medals by T. Webb and T. Wyon, 1805.

30. By C. Andras.

Effigy. Life size 1806. Westminster Abbey. Based on Hoppner's portrait, but the sculptress is believed to have had sittings from life, for she showed a wax of Nelson at the Royal Academy in 1801. *Quarterly Review*, February 1810.
Archaeologia, Vol. LXXXV, no. 7, p. 169.
The Times, 8 December 1932.
The Mariner's Mirror, 1941, pp. 307–13.

A useful general reference is an article by Commander C. N. Robinson in *The Print Collector's Quarterly*, Vol. XVII, no. 4, 'The Engraved Portraits of Nelson': and I acknowledge with great pleasure the collaboration of Mr Michael Robinson of the National Maritime Museum. See also *The Navy*, October 1956, 'Nelson Portraits from the Life'.

NOTES

MODERN CLOSE-HAULED SAILING

Sir Alan Moore, speaking of modern Bermuda-rigged yachts, says: 'It is said that the larger decked boats can sail at two points from the wind.'

In the course of development work on small sailing yachts, I have made a particular study of this question of close-pointing, and have discussed it with various leading yacht-racing helmsmen. In my opinion, the facts are as follows:

(1) Taking the expression 'close-hauled' to mean the point of sailing on which a boat makes its best progress to windward in smooth water, then there is very little variation (say, not more than two or three degrees) between the close-hauled courses of the best modern racing classes, regardless of size. That is to say, a 12 ft. National dinghy will point as close to the wind as a 12 metre. What difference there is can be attributed more to minor characteristics of the hull and sail plan than to size.

(2) The best yachts will not point effectively much closer than four points to the true wind—certainly not as close as 3½ points.

(3) As even the best yachts make at least three degrees of leeway, the course made good can be taken to be 4 points from the true wind.

(4) Since the larger yachts are sailing much faster than the smaller ones, the 'apparent wind' which they feel (i.e. the resultant of the true wind combined with the wind made by the yacht's

own progress) can be shown to be finer on the bow than the apparent wind experienced by a dinghy sailing the same course. To this extent only, the larger yacht may be said to be sailing closer to the wind than the smaller.

H. G. HASLER

CHECKED IN

In the course of a discussion of the well-known print of the *Essex* in 1913 Admiral Ballard took exception to the use of the expression 'checked in' as a term which he had 'never heard in 39 years at sea', whereas 'check' to him meant 'ease'. Some years later (1920, p. 383) it was pointed out that this meaning seemed to be confined to the R.N. and it was said that in merchantmen it would mean 'hold on'. In *The Rescue* (1920) Conrad wrote: 'The brig, her yards slightly checked in...', obviously using the expression in exactly the way to which Admiral Ballard objected.

R. C. ANDERSON

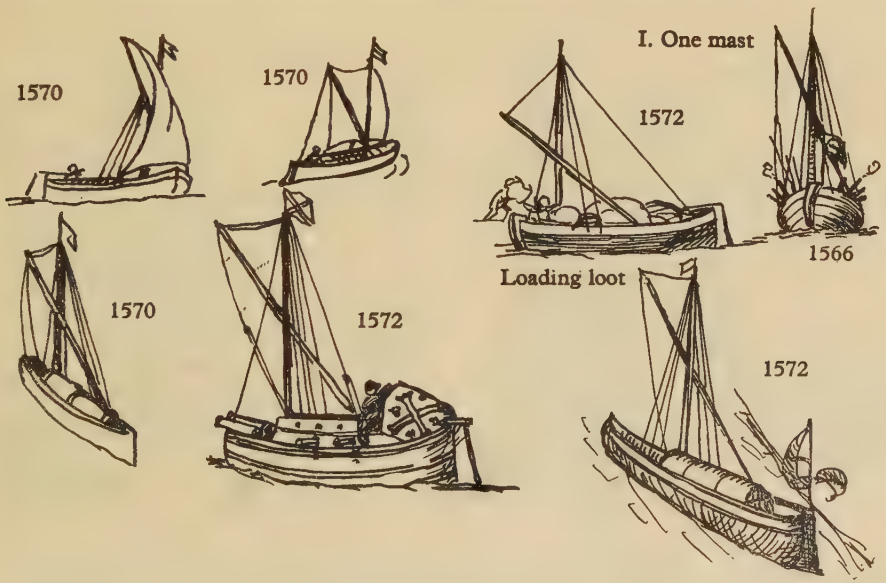
SAILORS' BAPTISM: JOHANNA

In Vol. 42, no. 2, p. 152, J. de C. Ireland suggests that Joanna was a name for Zanzibar. Johanna was the name by which sailors knew Anjuan, one of the Comoro Islands, in the Mozambique Channel.

W. E. MAY

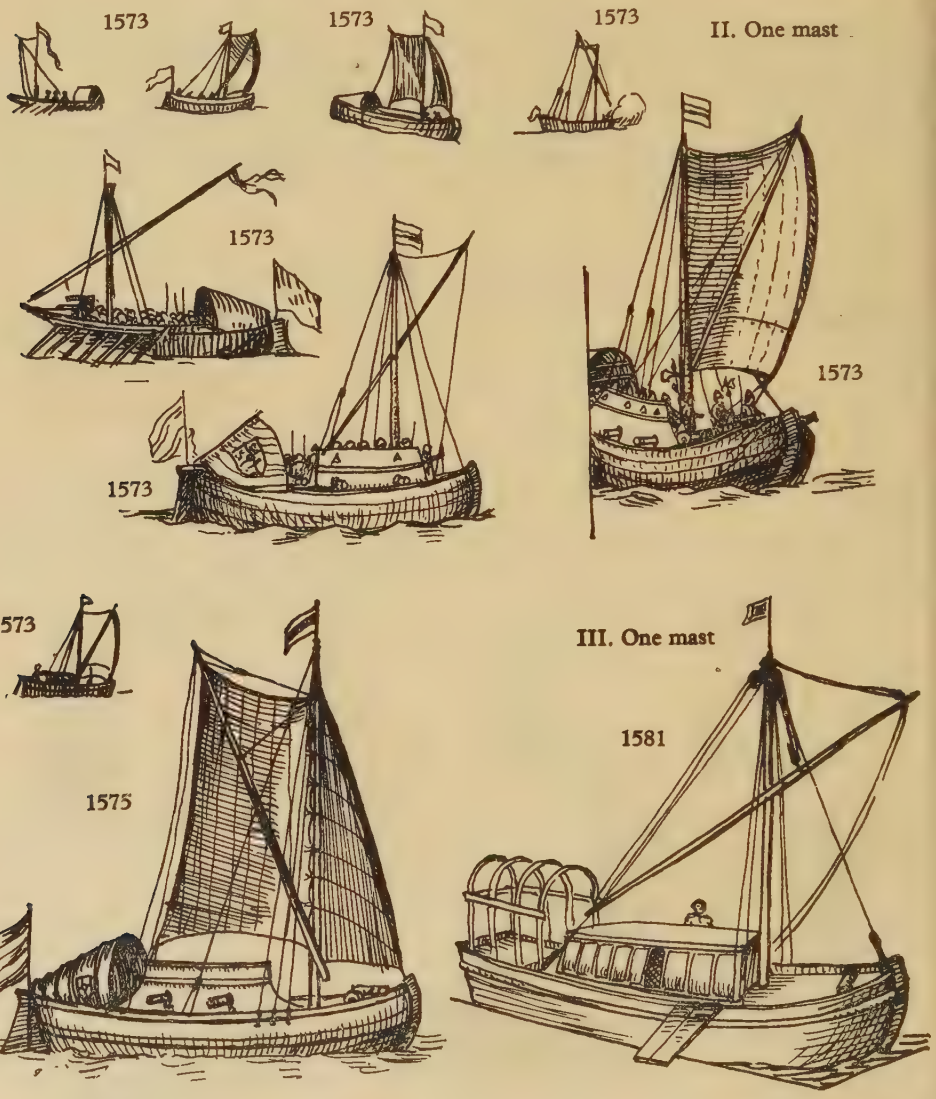
SOME DRAWINGS OF OLD SHIPS

Drawings of ships in old charts or books are not necessarily accurate representations of the originals, but it may be assumed that they are more or less correct in the general details. It is unlikely that the artist would invent new forms. He may distort the proportions or even the shapes, but whatever he drew would be based on what he had actually seen. One with knowledge of



ships can detect errors in proportion, and inaccurate or impracticable rigging will at once be obvious. The student of ships or the research worker should therefore lose no opportunity of studying such drawings when they are available.

Some time ago Mr Robert Hayne of Osmington, near Weymouth, lent the writer an old book entitled *Les Guerres de Nassau* by Guillaume Baudart de Deinse en Flandre, which was published in Amsterdam about 1616.[1] The book was illustrated by a number of line drawings, many showing battles on land, towns under siege and assault, and the movement of troops on the rivers. Ships



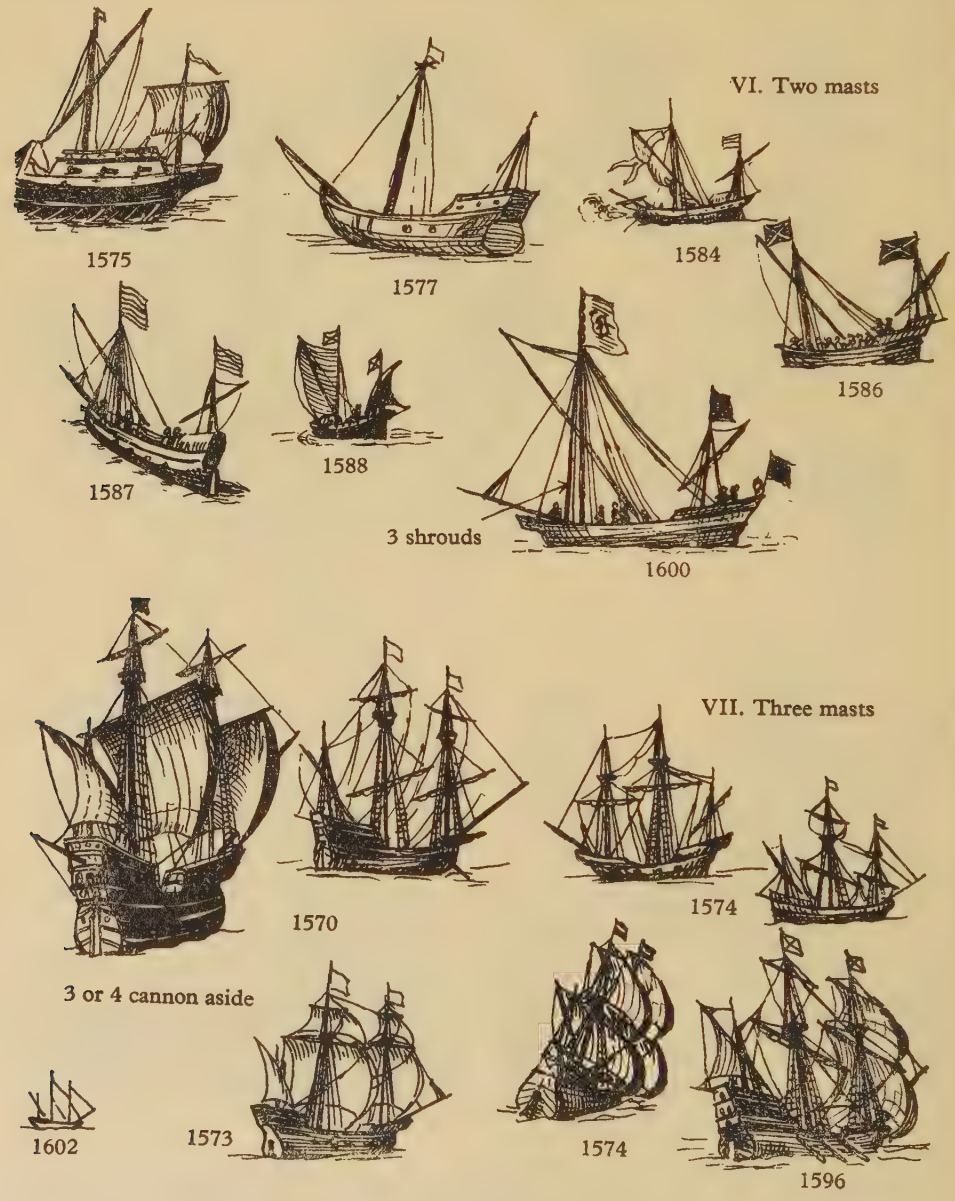
of various kinds were involved in the operations, and as the drawings gave evidence of careful and accurate draughtsmanship, we felt that the information they contained was worth recording. The accompanying sketches are very careful copies of the ships shown in the drawings. To facilitate

1 Les Gverres de Nassav. Descriptes par Guillaume Baudart de Deinse en Flandre, Amsterdam. Chez Michel Colin Marchand libraire sur L'Eau, au livre domestique 1616.

study and comparison they were separated into classes having one, two and three masts respectively. The date which accompanies each ship is that of the year in which occurred the incident depicted in the illustration concerned. These dates were given in the margin throughout the book.

The ships with one mast are shown in groups I to V. In each case they appear to be ships for operating on the rivers or in narrow waters. The spritsail seems to be the usual rig, although in a few cases a lateen sail is suggested. The ship of 1581 in group III has a yard for a square sail with lifts, braces, and a halyard, and one of the sketches in group V also has a yard with half the sail set on the starboard side, as was sometimes done on the topsail schooner of fifty years ago. A square

sail is also shown in the smallest sketch of this group. The ship of 1575 in group III has rather curious lines across its foresail which may be either brails or the cloths of the sail. Some of the sketches in groups II and IV suggest larger vessels of the galley type with oars and lateen sails. The



ships in groups I, II and III with guns mounted broadside fashion seem rather small for their armament and, curiously enough, the guns appear to be mounted on only one side of the ship.

Coming now to the two-masted ships (group VI) the one dated 1575 carries a square sail on the foremast. This mast is the smaller of the two, whereas all the other ships of this group have the

main mast forward, as in the ketch rig. The ship of 1588 has a spritsail on the main and a lateen on the mizen, whereas all the others seem to carry lateen sails on both masts.

The three-masted ships (group VII) have the carrack form of hull with the square transom stern. In several cases the braces are more vertical than usual, and the topsail braces are belayed in their respective tops. It is difficult to imagine how the yard could be set with this arrangement, but some of the drawings by R. Morton Nance in fig. 20 on p. 293 of *The Mariner's Mirror* for November 1955 show this same feature.

I have been able to mention only a few obvious points, but comments from those with greater experience of research in this period would probably be of considerable interest.

EDWARD BOWNESS

KNOTS PER HOUR

Though quite unconvinced as to the propriety of this expression, I must thank Lieutenant-Commander Waters for having, perhaps unknowingly, provided the explanation of Allin's use of the word knot for a distance of two miles. On 31 March and 1 April 1669 he gives what he 'had on the log-board' and his day's run in leagues and miles, the result in each case making a knot equivalent to 2 miles. Evidently he streamed the log every two hours and thus had to multiply the figures recorded by 2, as explained on p. 150 of the May *M.M.* When Allin writes of sailing so many 'knots a watch', as he sometimes does, he is evidently reckoning in the same way. In my note on his entry of 23 August 1668 I got as far as discovering that 'a knot in this context meant 2 nautical miles', but failed to understand why this should have been so.

R. C. ANDERSON

SIR HOME POPHAM, K.C.G.

In the February *M.M.* Commander Mead referred to the letters 'K.C.G.' on Sir Home Popham's tomb as an unsolved enigma. It has been suggested to me by Mr G. Percival-Kaye that they show that Popham was a Knight Commander of the Royal Guelphic Order of Hanover. This Order was founded by the Prince Regent in 1811 in the days before the operation of the Salic Law prevented Queen Victoria from succeeding to that throne. It is described in the *Encyclopaedia Britannica* as 'more British than Hanoverian' and as having received no new members since 1837.

R. C. ANDERSON

THE *JENNY* OF BRISTOL, 1791–7

The *Jenny*, Captain James Baker, 78 tons, belonging to Sydenham Teast of Bristol, was the first British vessel to enter the Columbia River, 1400 miles long, one of the great rivers of America. This was in October 1792, and although Captain Baker had been there 'earlier in the year' there is no evidence to prove that he was prior to Captain Robert Gray of the American ship *Columbia* of Boston, who entered on 11 May, named the river after his ship and is credited with its discovery.

The *Jenny* sailed from Bristol in June 1791, called at Bonavista in the Cape Verde Islands, rounded the Horn, touched at Easter Island and arrived at Tahiti in March 1792. Here she took on board 'Mr Wethered and four or five others' of the crew of the *Matilda*, which had been wrecked the previous 25 February. On her passage to Hawaii, the *Jenny* called at Christmas Island (L. 57 N., 157·28 W.; discovered by Cook in 1777), where Captain Baker 'found Captain Cook's bottle and he also found what Captain Cook could not find on this island, which was a very essential article, fresh water. Here he completed his wood and water, turned about seventy turtles, and found plenty of excellent cocoa nuts. He left on the island a fine Otaheite boar and a sow big with young and half a dozen cocks and hens, and, putting another paper mentioning what he had done into Captain Cook's bottle sealed it up again and left it in the same place he found it.' The date of the *Jenny*'s departure from Hawaii is not known, and she is next heard of on the

Oregon coast where Captain Baker entered the Umqua River, which he named 'Port Sidenham, in honour of Mr Sidenham Teast his spirited commercial owner'. It is now called Winchester Bay. After trading with the Indians about ten days and obtaining a few otter skins, the *Jenny* is next found at Clayaquot Sound in Vancouver Island, where she fired upon and killed some Indians who had caused trouble on board the ship *Butterworth* of London. She sailed northward on 6 August, arriving at Nootka Sound on 7 October. Captain George Vancouver in H.M.S. *Discovery* had arrived there the previous 28 August and he says that he received on board from the *Jenny* 'two young women for the purpose of returning them to their native country, the Sandwich Islands'. As the *Jenny* 'was bound from hence direct to England, Mr James Baker, the commander, very earnestly requested that I would permit these two unfortunate girls to take passage to Onehow, the island of their birth and residence'. Vancouver also mentions that the *Jenny* was 'rigged as a three-masted schooner.'

The *Jenny* sailed on 12 October and Vancouver, who sailed about the same time, detached his consort, H.M.S. *Chatham*, Lieutenant William Broughton, to examine the Columbia River, discovered on the previous 11 May by Captain Gray. Broughton went up the river for about 100 miles and on returning found the *Jenny* anchored in a little bay behind Cape Disappointment, which was named Baker's Bay by Vancouver in honour of the *Jenny*'s master, a name it still retains. It was here that Baker told Broughton that he had been in the river 'earlier in the year', and on 10 November the two ships left the river, the *Jenny* leading the way over the bar. They were in company for a week in heavy weather and a log kept in the *Chatham* states that on the 19th the *Jenny* informed them that 'she had split all her sails and carried away most of her rigging and that she was in distress for rope and twine. Supplied her with one coil of 2-inch and one pound of twine.' *Felix Farley's Bristol Journal* records the arrival of the *Jenny* at Bristol from 'Nootka Sound' in June 1793.

The reason so little has been heard of this voyage is that Captain Baker probably received the same orders that were afterwards given to Captain Charles Bishop of the *Ruby*, another of Teast's ships which made a similar voyage in 1794–6: 'You must keep your orders, route and instructions a profound secret, and if you are not in want of assistance have no intercourse whatever (especially while you are making trade) with any other ships, and you must not part with any of your articles of trade to barter with other ships, not even for furs.'

On her next voyage the *Jenny* was converted to a ship and, commanded by Captain John William Adamson, sailed from Bristol in October 1793. She reached the Californian coast in April 1794 and entered the Columbia River on 11 May to seek shelter from 'a most violent harequain'. She made no attempt to trade but when the weather moderated sailed for Nootka Sound and then for the Queen Charlotte Islands where she was in company with the *Jefferson* of Boston, Captain Josiah Roberts. Visits were exchanged in spite of the owner's orders and the *Jenny* remained here until the end of the season. On 5 August the *Jenny* sailed northwards returning on 14 October with 2000 sea-otter skins. On 29 September the *Jenny* again anchored at Nootka where Vancouver was present in the *Discovery*. Captain Adamson, who had been provided with a licence by the East India Company permitting trade in Chinese ports, sailed for Canton, carrying a letter from Vancouver, dated 2 October, to the Navy Agent, James Sykes, whose son was serving under him as a midshipman. The *Jenny* arrived on Christmas Day and Adamson sold his otter skins and loaded a cargo of tea for the Company. *Felix Farley's Bristol Journal* of 23 July 1795 records that:

'On Wednesday morning arrived in Kingroad the ship *Jenny*, a small vessel only 78 tons burden, belonging to Sidenham Teast of this city. Commanded by Captain John William Adamson, her voyage has been to Nootka Sound and China, in which she has been round the world in the course of one year and ten months. This voyage may be considered as a phenomenon in the history of navigation, not only on account of the smallness of the vessel but that it has pleased Providence to spare the lives of the captain, officers and the whole of the ship's crew who are all returned in perfect health. This is the third voyage made round the world by Captain Adamson.'

On her next voyage the *Jenny*, Captain Buckle, sailed in February 1796 for the Canary Islands and Africa. On 20 February 1797, the *Jenny*, when homeward bound with a cargo of gold-dust, ivory, dye woods and other merchandise, was wrecked on Lundy, all hands, including four or five

passengers, being lost with the exception of the chief officer. On the latter's arrival at Bristol, Sydenham Teast sent him back to Lundy in company with his foreman, John Gay, to see if any salvage could be effected. The passage was made in the pilot-cutter *Auspicious* but the salvage operations were interrupted by an attempt to recapture a small prize, the *James and Mary* of Bridgwater, which had been taken by some French privateers that were still cruising off the island. The attempt, however, had to be abandoned and the *Auspicious* made for Ilfracombe under full sail where information was given which led to the dispatch of H.M.S. *Scourge* from Plymouth, which was successful in making prizes of three Frenchmen. Gilmore, the Bristol pilot, and John Gay received great credit 'for the prompt and daring action they had taken in the matter'. The place where the *Jenny* was wrecked is still known as Jenny's Cove.

Sydenham Teast, the builder of H.M.S. *Hermione* in 1782, famed for the mutiny of 1797, is also said to have been the builder of the *Jenny* (*Western Daily Press*, 9 June 1908).

Authorities

'Voyages of the *Jenny* to Oregon, 1792–94', by F. W. Howay and T. C. Elliott, in *Oregon Historical Quarterly*, Vol. xxx, 1929.

'A List of Trading Vessels in Maritime Fur Trade, 1785–1794; 1795–1804', by Judge F. W. Howay, in *Transactions of Royal Society of Canada*, Vol. xxiv, 1930.

J. W. D. POWELL

THE SPANISH DON

Anent the discussion in a recent issue of *M.M.* regarding the use of 'Don' before a Spaniard's surname, readers might be interested in a brief history of this appellation of honour.

The popes were the first to make use of the title of 'Don' or rather 'Dom', a word taken from the first syllable of *dominus* which was only used in referring to God. At a later date, 'Don' was authorized for Bishops, Abbots and other high dignitaries of the Church and eventually included monks, especially Carthusians, Benedictines and Bernardines. In Portugal, only the King and members of the royal family could use the title 'Dom'. In passing into Spain, the word was changed to 'Don' because of the special phonetics of the Spanish language.

Originally, 'Don' was a title of honour and dignity and applied only to those who had letters patent of nobility. Prior to the thirteenth century, this title was utilized in referring to Christ as can be seen from these lines of the *Cid*:

'En el nome de Dios que fizo toda cosa
E de Dom Jesucristo, fijo de la gloriosa.'

Until the beginning of the fifteenth century, this title was used only by Kings, sons of Kings, prelates, Grand Masters and the nobility of Castile. In the seventeenth century, 'Don' began to be misapplied to such an extent that peasants, Jews and even prostitutes made frequent misuse of this once honourable title. Its abuse became so widespread that Philip III in 1611 published a decree restricting the use of 'Don' to Bishops, Counts, and wives and children of titled families even though the children were illegitimate. A Royal decree of 1843 authorized attorneys and notaries to place 'Don' before their surnames in preparing legal papers and documents. Later, this title was authorized for those who possessed a degree in the sciences and liberal arts and in October, 1864, its use was extended to include those who had been decorated with the Cross of Beneficence. The granting of this title was, however, subject to a fee, the regulations specifying that 200 reales were to be collected for life-time use, 400 reales for a life in being plus one, and in perpetuity, the sum of 600 reales was levied.

In Spain to-day, any man of good character and reputation may use and is addressed as 'Don'. In South and Central America, the use is more widespread. Every labourer, mechanic and tradesman is addressed as 'Don', a device employed by society to avoid familiarity with servants and the labouring class.

EDGAR K. THOMPSON

BEER HEAD LUGGERS; MAIN MAST AND FOREGIRT

In August 1900 the late C. G. A. Burnett, whose 8-ton cutter is referred to on p. 276 of the *M.M.* for November 1955, wrote in reply to an enquiry (a small spelling mistake and punctuation are corrected).

'You are quite right about the Beer trawlers; they do have the contrivance for the foresail; the *main mast* they only have up while the trawl is down and is kept up by a forestay made fast to the foot of the foremast, and the tiller is unshipped and the boats steer themselves, on a reach.'

The letter had a rough sketch of which a fairly accurate copy is reproduced. Since the trawl 'warp' is shown and named I think my friend intended to convey that the other sails were kept up when the mainsail was set.

Fig. 1

He has drawn the mainsail on the lee side of the foresail, probably a mistake but possibly not, in view of its special function. The foregirt, the spar used to give a taut luff to the foresail, is almost certainly shown too long and at a wrong angle.

R. C. Leslie in '*Old Sea Wings, Ways and Words*', 1890, describes and illustrates the Beer boats in chap. IV. He shows a foregirt to the mainsail as well as the foresail, and mentions that the main tack was hooked to windward of the mast. He shows it so and to windward of the foresail.

The bumkin to which the foretack came was bent downward and was of iron.

The foregirts (Leslie is my authority for the word) are slightly inclined downwards from the masts to the bolt-ropes. The fore ends seem to have lodged in the reef cringles. Three reefs are shown in the foresail and mainsail and two in the mizen.

Leslie mentions 'the great foresail', indicating that my friend was not far wrong in his relative proportions.

Leslie states that there were nine or ten such boats and that they were clinker-built and quite open. He shows a transome stern.

A. MOORE

SEVENTEENTH-CENTURY REEFS

Mr Cannenburg has called my attention to a mention of reefs well before the middle of the seventeenth century. It occurs in the entry for 27 September 1639 in the Journal of Matthijs Hendriksz Quast, printed in Vol. 56 of the Linchoten Society's series (p. 37).

This entry reads as follows: 'Tuesday 27th do. [September 1639] in the morning the weather eased somewhat; so took out the reefs of the courses, added bonnets and at daybreak set topsails. . . .'

Quite apart from its early date this entry is remarkable in that reefs and bonnets seem to have been present simultaneously and that the reefs were in the courses. It had always been thought that they reappeared first in the topsails.

R. C. ANDERSON

MAHONA OR ?

With due respect to Dr R. C. Anderson's criticisms—published in the May 1956 number of *The Mariner's Mirror*—of my attempt at identifying the ships in the works of Bruegel, I feel with regret obliged to confess that his rather brief argumentation failed to convince me of error; besides, he does not propose another solution of the problem of determining what kind of vessel the so-called 'sea-monster' was.

I came to the conclusion that it was a mahona by a process of elimination wherein I reviewed all the square-rigged vessels of the sixteenth century which I found mentioned in chronicles, historical works, treatises, encyclopaedias, dictionaries and glossaries. Only the mahona satisfied the fourfold condition of having a hull resembling that of a galeass, of not being propelled by oars, of having the rig of a nao or a galleon, and of being used by Moslems and Spaniards alike.

Some unit of the 'sea-monster' type may have been counted among the 'urcas' of the Spanish Armada of 1588. But the real *hulk* was like the ship of the Bruegel-Huys engraving forming my plate 9 (Bastelaer 98). Vessels of that type are to be seen fairly numerous in the wood-cut by Cornelis Anthonisz., published in 1544, representing a bird's-eye view of Amsterdam, which port was one of the strongholds of the hulk.

I am not aware of any passage in my text justifying the attribution to me of the belief that the Turkish mahona and the Venetian galeass were almost identical by the middle of the sixteenth century. On the authority of a definition in Veitia's *Norte de Contratación*, I mentioned that the mahona was also called galeaza by the Spaniard, but did not go further into the matter.

I have no knowledge of the text of the dispute between Dr Anderson and Mr Nance, as the nos. 1 and 2 of Vol. v (1919) of the *M.M.* are failing in my collection. I would be much obliged with a photostat-copy (at my expense, of course) of the articles concerned.

Contrarily to what Dr Anderson means, I was not ignorant of Mr Nance's opinion concerning the two vessels with cockbilled yards in my plate 10 (Bastelaer 104), which he considered as the bow and stern views of the same ship as plate 8 (Bastelaer 103). A very close examination of the originals revealed several differences between those vessels, which are not clearly visible on Nr Nance's drawings, as, for example:

In the central ship of my plate 10, the lower tier of guns is placed between the first and the second wales, while in the ship of my plate 8, it lies between the second and the third wales.

The ship to the right in my plate 10 shows a stem with an inward curve, which the ship of plate 8 has not, and on the latter ship and lower rail of the overhanging forecastle starts at the third wale —seems to continue it—while on the ship of plate 10 it starts at the fourth wale on the starboard side, and at some indeterminate place on the port side.

I find it difficult to admit that Bruegel would have resorted to a model when, while he lived at Antwerp, he could have seen the originals at will.

O. BUYSSENS

REDDINGSBOEJE AND BATHOMETER

Whilst reading recently the delightfully lively travelling notes of Bernhard, Herzog zu Sachsen-Weimar-Eisenach, entitled: *Reise durch Nord-Amerika in den Jahren* 1825–1826 (Weimar, 1828, 2 volumes) I came across two amusing examples of the 'nautical gadgeteer's' production, which I thought worth recalling to the notice of readers, both as mechanical curiosities as well as examples of the pitfalls which beset the path of the enthusiastic amateur when dealing, from purely theoretical premises, with so uncertain a subject as the sea.

That part of the Duke's journey which took place between Antwerp and Boston was accomplished in the newly built Dutch corvette *Pallas*, then acting as a training ship. She was manned by a select crew of midshipmen under the command of Captain Ryk, whose duties included the carrying out of a number of scientific experiments (not described by the Duke) as well as observations of foreign naval establishments and equipment.

The first invention to be described (p. 16) was a device for picking up sailors who had dropped overboard. This machine, called a 'Reddingsboeje', consisted of a large wooden cross, with two suitably sized elliptical copper vessels affixed to the extremities of the short arms acting as bouyancy bags. The long arm of the cross, which was intended to sink vertically, had a foot rest, whilst the head, which it was hoped would project above the water, contained a tube filled with a pyrotechnic compound capable of producing a bright flame for twenty minutes even under water. The purpose of this was to guide the swimmer to the buoy after dark. The Reddingsboeje was secured aft, over the rudder, and in case of need it was to be lowered into the water at the end of a line, the firework having previously been ignited with a flint lock.

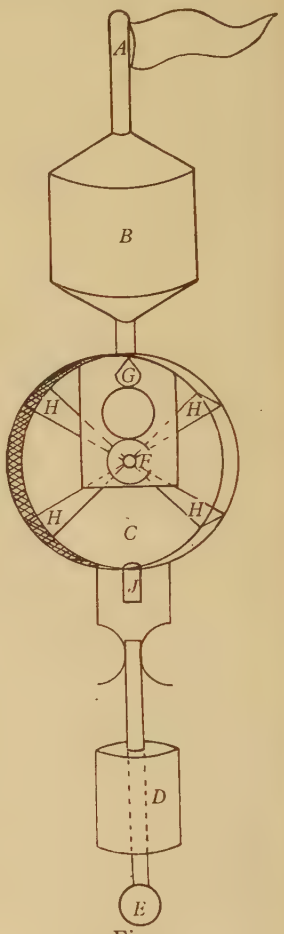


Fig. 1

On 2 July a ship's boy did indeed fall overboard. The unfortunate lad had gone to use the heads under the bowsprit and must have made a clumsy movement or lost his hold. The alarm was given at once, but the ship was travelling at a good rate through the water and by the time his body, floating on its back, passed the stern, it already appeared lifeless to the watchers there. In any case, although the Reddingsboeje was launched at once, the boy failed to make use of it. The cumbersomeness of the machine was then demonstrated by the fact that after an hour's futile manoeuvring a boat had to be lowered in order to retrieve the buoy. The Duke mentions that the boat had the greatest difficulties in regaining the ship, so that it would appear that the Reddingsboeje's first serious trial was carried out under rather adverse conditions, which probably contributed to its failure on this occasion.

The other invention described by the Duke (pp. 70 ff.) was of a rather more complicated and theoretical nature. Its purpose was to measure the ocean's depth in places where the ordinary leadline no longer touched bottom. Called a 'Bathometer', it was invented and constructed by a doctor Stiprian Luscius of Delft who managed (rather cleverly, one is inclined to think) to persuade the Dutch government to purchase two for 1000 Fl.

The main part of the machine, as will be seen from the figure, consisted of two brass discs of about 30 cm. diameter held some 3 cm. apart (section *C* in figure). Between the discs were the vanes *H* which, turning round axle *F*, activated gears situated in a small box, through which the indicator *G* was caused to register the number of revolutions performed by the vanes *H*. The rim of the strip which held the two discs apart consisted for about a third of a wire grating which allowed the water to impinge on the vanes at an angle; the remainder consisted of a solid brass piece. The whole was suspended from the buoy *B* at the top of which was a small mast *A* with a flag attached, for recognition in the water. At the opposite end hung the lead weight *D* by which the whole apparatus was caused to sink.

The idea of the inventor was that the machine be placed in the water and allowed to sink. The weight *D* through which passes a rod, with the wooden ball *E* affixed to its lower end, drags the Bathometer to the bottom. The water entering into the machine causes the vanes to rotate, the number of rotations being registered by the indicator G. When the ball *E* strikes the sea-bed, it pushes the rod up and so forces a bolt *J* into the machine, locking the vanes. At the same time this movement, acting on the two retaining springs, detaches weight, rod and ball, thus allowing the buoy with the Bathometer to regain the surface. By noting the number of revolutions given by the indicator, the depth reached can be computed.

During trials with this machine off the American coast, two buoys were used: one of sheet metal and hollow, the other of solid cork sections bound with copper hoops. Luckily the precaution was taken of attaching the machine to a line, for at the depth of 30 fathoms the pressure of roughly 80 pounds per square inch flattened the metal buoy. The cork buoy, when sunk to 100 fathoms, did rise again, but the pressure (some 266 pounds per square inch) had severely damaged it and large pieces of cork had been forced out. Moreover, the bolt *J* instead of locking the vanes had been squeezed out of the machine, and the vanes themselves had been pressed off their axle.

It seems curious to us now that the good doctor had not thought of the more obvious, and simpler, idea of measuring pressure rather than rotations, but in any case, whatever system he would have adopted, a similar machine must always have suffered from one grievous disability: the difficulty of recovery. As the Duke himself observed, given the inevitable drift of the ship, the time of submersion and unknown effect of submarine currents, the sighting of a 'Bathometer' on its re-emergence must always have been a rather chancy business. It is therefore all the more strange that, in spite of patent failure, he congratulated the doctor on his 'laudable invention'.

One other experiment was described which it might be interesting to mention in conclusion, and this concerned Barlow's correcting plate for compass errors. This is described here as consisting of two thin iron discs of about 16 'Zell' diameter, held apart by a thin wooden disc and fixed to it by brass screws. The whole was mounted on a copper rod which projected from the compass at right angles, the distance of the disc from the compass being adjustable along this rod.

Apart from these inventions (which are described only incidentally) the Duke gives us in his memoirs an amusing account of early nineteenth-century Atlantic crossings.

The outward journey in the *Pallas* from Antwerp to Boston via Portsmouth took thirty-seven days, whereas the homeward run from Sandy Hook, New York, to Liverpool was accomplished in only nineteen days in the packet ship *Pacific*. On both occasions, but especially on the outward voyage, the Duke enjoyed 'comforts' on board which would have caused the average modern tourist to quit the ship at the first port of call.

M. M. WITT

The following notes were written, probably in 1912, by the late Mr L. G. Carr Laughton.—*Editor.*

THE BERMUDA RIG

The letters of several correspondents recently published in *The Times* have shown clearly what the 'Bermuda rig' was in Bermuda within living memory, and have referred to improvements in it alleged to have taken place about 100 years ago; but they have neither touched on the origin and early history of the rig, nor have they raised the question how far the rig, which is now being extended from small to large racing yachts, is justly entitled to bear the name of Bermuda. It may be that a consideration of its origin and development, and of its essential features, will convince most minds that the modern extremely taut yacht rig has not been evolved from the Bermuda rig of any period, and would therefore be better described by some other name. Indeed it is only by an after-thought that the name 'Bermuda' has been attached to this rig. When these enormous and rigid vertical pole-masts, comprising in one piece lower-mast, top-mast, and topsail yard, were first introduced, they were named after the Marconi masts which they do in fact resemble; and even to-day this name is still sometimes applied to them.

A particular type of sail was associated with Bermuda from a very early date in its history. The islands were discovered in 1609, and there is reason for supposing that within a dozen years of that date the distinctive rig had gained a footing there. Yet another fifty years, and the Bermuda boats and their sails were of established reputation. It was a visitor to the islands who in 1671 wrote of these boats, certainly with some exaggeration:

'in the world there are
None in all points that may with them compare.'

Samuel Fortrey (Mr Pepys's 'Mr Fortree'), a very few years later, probably about 1675, described the Bermuda sail in the important pamphlet on naval architecture to which he gave the quaint title 'Of Navarchi'; and from that time on references to it are not infrequent.

The original Bermuda rig

In the early part of the seventeenth century, and probably even earlier, a not uncommon rig for small craft, especially for yachts, in Holland consisted of two tall jib-headed sails, without booms, each laced to its own mast. The foremast, somewhat the smaller of the two, was stepped as far forward as it would go, and the mainmast before the midships. There was no jib. The masts were without shrouds or stays, and were very whippy; and they raked so much that each sail was an isosceles triangle. This is the rig which, in some way of which there is no explicit record, became the original Bermuda rig.

Professor E. P. Morris, in his valuable essay on 'The fore and aft rig in America', has found, in a passage from Captain John Smith, what seems a convincing explanation of its introduction. Smith, in writing of that interesting, but by no means strait-laced, seaman Capt. Nathaniel Boteler, who became governor of Bermuda in 1619, stated that one of the many complaints laid by his subjects against their governor was that 'having an excellent Dutch carpinter he entertained of them that were cast away in the Dutch frigot, he emploied him in building of boats, whereof they were in exceeding great want,. . . and sells them away for his own profit'. The Dutchman naturally built and rigged the boats after the manner of his own country; and it is clear too that he did not rig them with the spritsail, which was then by far the commonest fore and aft sail in northern Europe, for this sail was certainly not introduced early to any part of America, and never gained a real footing there. The choice lay between the spritsail and the lofty triangular sail; and as the spritsail certainly was not chosen, the inevitable conclusion is that the triangular sail was.

This is the rig which is shown in the earliest crude drawing of a Bermuda boat; and this is the sail described by Fortrey as a 'Bermoothes sail', with the addition, however, that 'by a wind it will bunt very much, which will cause a great deal of back sail, which will much hinder the way of the vessel'.

Its ultimate origin

The lateen sail of southern Europe was adopted in the fifteenth century by the northern nations for use as a mizen in large ships; and it is therefore likely that it was introduced also at an early date into small craft. Towards the end of the sixteenth century we meet with 'Newcastle carvels', of which we learn, a few years later, that 'their sails stand like a pair of tailors shears'. For want of a better we have to be content with this inadequate description, which leaves us in doubt whether the sails of these carvels were lateens—as has generally been supposed—or were the same as those of the Dutch boats. The description would apply equally to either; and the difference between the two, though important, is slight; for the sail which it is convenient to call the Dutch sail (though it is equally probable that it began in England) is nothing but a fixed lateen. In the Mediterranean to this day lateens are found fixed by the simple expedient of lashing the yard to the mast; but in the north of Europe over 300 years ago men went a step further, and converted the yard itself into a mast.

The Bermuda sail, thus evolved, had all the characteristics of the lateen, its lack of stays, its whippiness, its loose foot. It had, as Fortrey noticed, the disadvantage of the lateen in holding a lot of dead wind; but it also shared with it the advantage of the flexible peak, which bent in a puff and eased the boat by spilling the superfluous wind, while by its springiness it gave life to the boat. It seems to have been recognized that the original Bermuda sail was essentially a lateen: indeed in writing of 1815 Michael Scott describes the sail by that name—'with both lateen sails drawing beautifully'.

Improvements

Quite early in the seventeenth century the original fixed lateen sail was improved upon, both in Holland and in England, by the addition of a boom, which made it stand flat. The two-masted rig continued in European waters, but after about 1630 the mainsail was always boomed in vessels

of any size. The foresail occasionally appears with a boom, but more commonly without. No doubt the correct way of describing these vessels would be as 'shallops with a shoulder-of-mutton sail abaft and a Bermuda sail afore'. But the Bermuda two-masted rig never adopted the shoulder-of-mutton.

In England the shoulder-of-mutton sail was used also as a one-masted rig, especially for ships' long-boats. It was then made broader on the foot than the sail used in the two-masted rig, and it was given a small headsail. This rig, first heard of in England in 1545, became common in England during the second half of the seventeenth century; but there is nothing to show that it was at that time introduced into Bermuda, though it is essentially the rig which finally superseded the two-masted rig there about 100 years ago. There is a model of a Bermuda boat with this rig in the museum of the Royal United Service Institution: she is named the *Lady Ussher*, and her name dates her, for Sir Thomas Ussher was admiral-superintendent at Bermuda from 1832 to 1835.

Smyth in the *Sailors' Word Book* (1865) ends his description of the 'shoulder-of-mutton' sail by saying 'it is the Bermuda or 'Mugian rig'.

Folkhard (1854) was satisfied that the one-masted rig had been introduced into the islands by the Hon. H. G. Hunt in the 1820's; but it is quite certain that the one-masted rig with boom and headsail was in use there long before that date, for the *Naval Chronicle* (Vol. IX, p. 109) reproduces a drawing by N. Pocock showing such a boat, and Pocock's sketches in the West Indies were made about 1780. We do not in fact know how old the one-masted rig was at Bermuda, and it is probable that it existed side by side with the original two-masted rig from the seventeenth century. Hunt's development seems to have consisted in applying the one-masted rig, confined hitherto to quite small open boats, to vessels of considerable size. The 'horizontal spreet' which is used as a boom is probably the earliest kind of boom that was used with any kind of sail. Bermuda has been conservative and has retained it: elsewhere a boom hinged to the mast either by jaws or by a gooseneck was substituted at an early date. The hinged boom did not flatten the sail as the spreet boom did; but in most vessels that was no disadvantage, because few were fit to carry really flat fore and aft sails. The schooners and cutters which might have benefited by them were too big to use a boom of that pattern, which is essentially a small-craft fitting.

The true Bermuda rig, whether with two masts or one, was evolved for use with a type of hull extremely different both in lines and ballasting from the hulls of modern racing yachts; yet it would no doubt be interesting to see what sort of a show the whippy raking mast would make against the rigid vertical mast. The competition would be between the 'descendants of the lateen and of the spritsail; for the modern cutter-rig, of which the Marconi-rig is but a development, owes its vertical mast, through the smack, to its hoy ancestry; and the hoy in her turn was but a modification of the very old spritsail rig.

L. G. CARR LAUGHTON

PENTHOUSE: PENTIS

In the accounts for building the *Henry Grace à Dieu* the word *Penthouse* is applied to an otherwise undefined structure which was built into the ship. The word occurs twice, but only in the combination 'Penthouse (or peynthouse)-beam' (E 36/5, ff. 53 and 243). The context shows no more than that it took five shipwrights twelve days, i.e. 60 man-days, to hew this beam in the woods; from which it may safely be inferred that the beam was big, and that the structure it was to support was large in proportion.

The word has not been found elsewhere in the naval accounts of this date, save once, in 1575, in its earlier form *Pentis*, in a passage which is equally, if not still more, obscure. This occurs (E 101/57 (2), f. 27*b*) in an account for miscellaneous small iron-work, much of it belonging to guns; and while there is nothing in the context to explain it, there is at least a possibility that the *Henry Grace à Dieu* may be referred to. The passage reads thus: 'Four hookes for the pentys in the loopp weying 4½ lb.'.

It is necessary to begin by showing how these two words are essentially one; and that the original meaning, after being obscured over a long period, has of late reasserted itself.

In the fourteenth century *Pentis*, with variants *pentice* and *pendis*, meant an annexe to a main building; and as this commonly took the form of a 'lean-to', having a roof with one slope only, 'the

word was evidently from an early period associated with French *pente*, a slope or declivity' (O. E. Dict.). This association, however, did not account for the second syllable, which later by popular etymology was 'explained' by its conversion into *-house*, and from the sixteenth century *Penthouse* became the common form of the word, and 'lean-to' the common, but not the only meaning. The ultimate origin of the word is from the late Latin *appendicium*, meaning an 'annexe' of any form, to whatever kind of building. After being for very long out of common use, save with the meaning of a 'lean-to', 'penthouse' has within recent memory been coming into favour again as meaning an annexe added on top of a large building, such as a block of flats.

This is of interest, for it suggests the most likely meaning in which it may have been applied to the great ships of the early Tudor period. Also, as Henry V built ships almost as great as the greatest of Henry VIII's, it raises the question how the earlier ships differed from the later in the form of their upper works, and especially in that of their after-castles. It might be expected that the earlier form 'Pentis' would be found in use for the after-castle, or for some part of it, in the great ships of Henry V, but no instance of it has been found. The most likely place in which to seek it would be in the 'particulars' of the accounts for building these ships, but unfortunately none of those detailed accounts have been preserved. This failure does not prove that the word was not then in use, but it does raise the further question whether the structure to which it might have been applied had come into existence so early.

To answer this question fully would involve a more detailed survey than has yet been attempted of the progress of northern shipbuilding between the thirteenth and fifteenth centuries. For the present it is enough to notice that, among Northern nations, the 'castles' which in the thirteenth century began to be raised as light temporary structures in ships fitted for war, being designed to give higher command to their missile weapons, became more important as the power of those weapons increased. The long bow established itself at the beginning of the fourteenth century as the first among these weapons, and, in spite of the introduction of guns, held pride of place for more than a century, that is until the closing stages of the Hundred Years War.

Why the gun took so long to establish itself afloat is yet another question to be answered. Here it is only necessary to say that although the date of the first gun (a very little one) known to have been put into a King's ship was 1337, and though from some thirty years later a few guns were borne by some ships, yet they are not known to have had any appreciable effect on war at sea until well into the fifteenth century. Even the great ships of Henry V carried only about six guns each, of which we have no particulars, save that they were distinguished from small guns shooting pellets of lead of the weight of $\frac{1}{2}$ lb. Of these small guns very few were in the big ships, and apparently none in the smaller. At least two important battles were fought at sea in this reign, and several carracks were captured, but, strange as it may seem, there is no mention of the guns, great or small, having been used in action.

It is probably safe to assume that from the end of the fourteenth, as in the latter part of the fifteenth century, the larger guns were mounted in the waist, and the swivels in the castles. As long as their number, and their individual weight, were very small, they would throw no considerable extra strain on the castle, and therefore would call for no appreciable addition to its size or weight. To Henry V's reign the castles were still joiners', not shipwrights', work, and it is recorded that as late as 1416 the 'somerhutches' of the *Holighost* and *Trinity*, two of the great ships, were built on them at a cost of only £4. 11*s*. 3*d*. The names given to early decks are difficult, owing to their never having been fully standardized; but it seems safe to say that about 1400 the after part of the 'upper orlop' was commonly called the 'somercastle', the deck over it the 'deck over the somercastle' or the 'somerdeck', the space above that the 'somerhutch', and the open deck above it the 'poop'. It is not easy to say how long a 'somerhutch' was during the period when it bore that name, but it seems to have been much shorter than the 'somercastle'.

L. G. CARR LAUGHTON

QUERIES

15. (1956.) The Anchor. On pages 72–3 of the United States Magazine *Life*, issued under date of 2 April 1956, and in which, by courtesy of the Trustees of the British Museum, there is reproduced, in colour, a depictation of a joint English and French naval expedition undertaken in a Crusade of the year A.D. 1390, as painted by a then contemporary artist.

Fig. 1

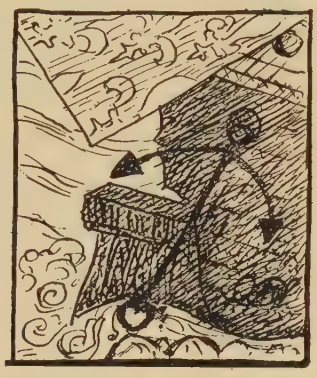


Fig. 2

Among the various vessels depicted there are four anchors of the kedge type, but without stocks. All are shown with rings both at the shank-end and at the crown; and in each case the anchor is shown snugged up to a hawse pipe, suspended from the crown, in an inverted position, and with the shank (to which no cable appears attached) swinging downward in position apparently likely to flail the vessel, perhaps destructively, in rough weather.

We are much interested in the history of the anchor and have accumulated a fairly extensive bibliography on the subject; we are familiar, for example, with the writings of Dr Frederick Moll of Berlin, such as appeared in Germany *c.* 1918, and in Vol. 13 of *The Mariner's Mirror* in 1927. None of our available literature, however, depicts or describes anchors stowed inverted and snugged up to the hawse pipe crown-first as in this picture.

We are much interested as to whether anchors of medieval times actually were stowed in this fashion, or whether there might have been perhaps a solecism upon the part of the artist.

If you have information in this matter, or care to venture an opinion, or to refer the enquiry to some person likewise interested in the history of the anchor, we shall very much apreciate the courtesy.

If any British friends have any question as to present United States practice in the manufacture and use of anchors and chain, or as to historical matter that may perhaps be covered by our researches, such as they are, we shall be indeed glad to reciprocate.

C. D. LINNENBANK

Note. This query comes from The Anchor, Chain and Forge Division of The Boston Motors Company at Chester, Pennsylvania, U.S.A. The relevant portions of the painting referred to have been redrawn by Mr Morton Nance (see Figs. 1 and 2). (Editor.)

16. (1956.) Condition of Dampier's ship *Roebuck*. I should be grateful for any information regarding the state and condition of this vessel when commissioned by Dampier. Dr J. A. Williamson in his Introduction to *A Voyage to New Holland* and Sir Albert Gray in his Introduction to *A New Voyage Round the World* describe her as 'old', 'far advanced in rottenness' and 'unseaworthy' when she left England.

G. RAWSON

17. (1956.) Insect class gunboats. Can anyone supply any information about the fate of the vessels of the 'Small China Class' of gunboats built in 1915–16 which served in Mesopotamia? All I can find out is that they were subsequently disposed of to the Iraq Government and the War Office. Can anyone improve on this?

D. K. ROBERTSON

18. (1956.) Surgeons at sea. I would be most grateful if you could suggest any books or references I might consult relating to the earliest appearance of surgeons at sea. Unlike their military confrères, any organized medical service, in the navy or mercantile marine, appears to be confined to the latest centuries (from the sixteenth? onward). However, I would appreciate any pointers you could possibly supply.

ERNEST A. GRAY

19. (1956.) Severn barges. A book *Old Towns Revisited*, recently published by *Country Life*, contains a statement: 'Besides the Bristol "trow"... they used the ashe or snaker, a Severn barge derived from the Viking long boat.' The author of the chapter in question cannot recall the source of his information. Can any reader help?

GRAHAME FARR

20. (1956.) Preventer braces. The mention of Preventer braces in a letter from Admiral Cumberlege in the current *Mariner's Mirror* prompts me to ask whether these preventer braces were kept permanently bent.

Steel quotes preventer braces for main and fore lower and topsail yards only and lists no blocks for them. They were therefore presumably single, so what was their lead?

Steel also quotes additional preventer braces for 'war only' for main and fore lower yards only, these braces requiring no less than four single blocks each. Were these braces only rove before going into action, and what was their lead?

C. M. BLACKMAN

21. (1956.) Cable-laid rope. Has anyone heard any reason advanced why cable-laid rope was extensively used for standing rigging? Size apparently had nothing to do with it, for in the middle of the eighteenth century hawser-laid was made up to 12 in. (or large enough for everything but the fore and main stays of ships of the largest size) and cable-laid was made as small as 3 or 4 in. Duhamel du Monceau, who in about 1750 conducted very careful and extensive experiments to determine the best way of making rope, found, other things being equal, that cable-laid was somewhat stronger than hawser-laid. This does not establish the superiority of ordinary commercial-made rope, for ordinary cable-laid rope was contracted more in laying than hawser-laid, and Duhamel found that any contraction (due to twisting) in excess of the minimum necessary to make the rope lay-up was very prejudicial to every desirable quality. He also stated that an erroneous popular belief existed in France that cable-laid was less permeable than hawser-laid, and since in English cable-laid was often called water-laid, perhaps this belief was entertained elsewhere.

It comes therefore rather as a shock to find nineteenth-century writers stating that hawser-laid had replaced cable-laid for rigging as it was stronger and stretched less, one attributing this inferiority of cable-laid to the circumstance that it *had* to be contracted more. Luce, 'Seamanship', Newport, 1864, says that hawser-laid was nearly 50% stronger, and, as in the nineteenth century the dockyards were equipped with testing machines, rational grounds must have existed for this estimate.

Is one to conclude simply that the Americans, English and Dutch (cable-laid seems never to have been extensively used for standing rigging in France) needed generations if not centuries to discover that they were using the wrong rope, or was there some circumstance such as the substitution of machine for hand manufacture that made cable-laid rationally preferable in one epoch and not in the other?

D. L. DENNIS

ANSWERS

3. (1929.) CUTTER-BRIG. I do not believe the two American definitions that have been cited (*M.M.* November 1955 and May 1956) prove anything beyond the lamentable tendency of lexicographers to lean on the work of their predecessors rather than to report current usages.

Smyth's exact definition (1867) is: 'A vessel with square sails, a fore-and-aft main-sail, and a jigger-mast with a smaller one.' There seems to be no earlier authority for this usage; Steel and Fincham agree that a cutter-brig or brig-cutter had a cutter's hull and a brig's rig. The *American Naval Encyclopaedia* (1881) has obviously only restated Smyth's definition. The eight-volume *Century Dictionary and Encyclopaedia* (1889–91) did not define cutter-brig, but the supplement (1909) has 'a square-rigged vessel with a fore-and-aft mainsail and a jigger-mast'.

Webster's in 1911 picked up the *Century* definition, restated it in terms of contemporary yacht rigs, and in view of the lack of other recent authority added the caveat 'now rare'. 'Probably imaginary' would have been closer to the facts.

JOHN LYMAN

16. (1955.) POLACRES. A letter from the late Leonard Carr Laughton of 13 October, 1909 describes a talk with a Leigh bawleyman, aged 63 or near. He said that as a small boy he remembered craft that used occasionally to come up the Thames. 'He described them as full brig rigged, with 2 square courses, single topsails, 2 topgalnts, 2 jibs and boom mainsail; but the lower top masts, & tgalt masts were all in one piece, poles.' He had forgotten their names. *Chasse marée* brigs, he called them at first, and did not know whence they came. They used to appear about once a month, 'but that was 50 years ago... He *thought* they were French, and was certain they were foreign. Their courses had considerable hoist.' He said he would know the name if he heard it. 'So I tried him with polacca, wh he welcomed as a long lost friend. I showed him the picture of a polacca ship in Lescallier, and he said yes, that was the sort of thing, but he thought that his brigs when at anchor left their tgalt yards aloft, though they lowered the topsail yards down close to the lower yards.' (Suggesting that the topsail yards had no footropes.)

ALAN MOORE

27. (1955.) PADDLE-WHEEL CRAFT IN CHINA. In this type of junk it is highly probable that some kind of crank-adjustment was provided so as to give a form of 'change speed gear' for use in conditions of varying loads.

This could have been done quite easily by arranging two or three crank-pin positions or holes placed at varying points on the crank radius. If the crank-pin is made to be part of the end of the connecting-rod, the alteration, in gear or in leverage can be brought into action in a quite simple manner by just hitching the pin into a fresh hole.

If the crank-pin was fitted with a flanged end (as shown in Fig. 1 overleaf) it could be kept in the hole by the pressure of working the rod.

W. ADAM WOODWARD

28. (1955.) CLEARING FOR GUAM. I have observed the practice noted by Mr R. D. MacGregor, wherein vessels cleared out 'for Guam', although not bound there, and was interested to see the reason given for this, viz. to avoid taking the mails.

I find that the practice occurs most frequently at South African ports, and continued at least to 1883, my last recorded reference being in that year. Vessels clearing 'for Guam' nearly always were engaged in cross voyages, where presumably no fixed and permanent arrangements could be made for disposal of mails. I find that vessels sailing from the Cape to West Indies (generally in ballast), and the Brasils and River Plate, and even vessels sailing to load sugar in Mauritius adopted this procedure.

Can anyone tell me which were the first sailing vessels built of iron to have water-ballast tanks, either as tanks or as double-bottoms?

Such ship sale advertisements as were to be found in the Shipping Papers do not seem to give much prominence to this facility until the late 1870's. The earliest built vessel I can trace as having a double bottom for water ballast was the Iron Brigantine 'C.H.S.', built by Harvey and Co., Hayle, in 1863. This vessel was built for Swansea owners for employment in the coal trade to France, where the advantage of water-ballast was particularly great since 50% of passages were in ballast.

ROBERT S. CRAIG

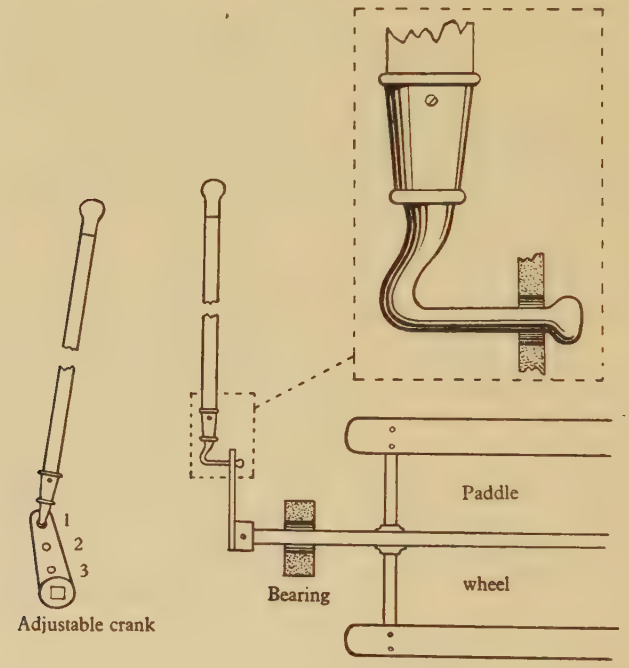


Fig. 1

35. (1955.) *Pompon.* It seems that the *pompon* on the top of French Navy's men is the residue of the original tuft in the age-old headgear of both seamen and country folk. To-day the cap is made of four pieces of cloth sewn together, but until the change which took place a little before or after World War I, it was a one-piece affair of felt. When it had become threadbare, the places not too heavily coated with the solid mixture of greasy dirt, tar and/or paint which years had brushed upon it, let one see that the fabric was knit. When a new cap was delivered to the man, it was for him to give it the usual flat disk shape, usually by inserting a circular rod of flexible wood (the 'baleine', desirable to certain captains and banished by others, before it was finally made standard pattern); when just out of the supply stores, the cap was a tapering pouch, nearly the same shape as the knitted headgear used, not so long ago; as a nightcap by bald or draught fearing male people, and as an all-time headgear, by the peasants of several provinces (*bonnet de nuit*, *bonnet de coton*, or slangish, *casque à-mèche*, tufted helmet). This had been, for ages, used by seafolk, even by gentlemen serving on board ships when they had a fancy to dress *à la matelote*; there is plenty of pictorial evidence about it in the seventeenth and sixteenth centuries, and other bits up to the Mediterranean Antiquity. The change from a tapering to a flattened appearance was progressive. About one hundred years ago one finds pictures of seafolk wearing a conical cap slightly inflated all round; men of the Navy then wore quite ample and round brimmed caps, more like a tam o'shanter than the rigid affair of to-day. All these caps were of knitted wool and, on ending the knitting, it

was customary to leave some length of each thread, which resulted in a kind of wick. This, later, was elaborated into a real tuft. The men like it; having an extra large *pompon*, or a silk one, was one of the punishable offences in my time. The tuft was held in place by means of a safety pin or paper fastener.

By the way, *béret* is a landlubber word. The regulations still say *bonnet de travail*, same as in the days when the cap was allowed only in undress, the formal headgear being the varnished leather or tarpaulin or straw hat. The usual word is *bonnet*.

L. GUILLEUX LA ROËRIE

37. (1955.) WHITE STOCKING DAY. In the revised Merchant Shipping Act 1854 a clause was inserted by which a seaman signing Articles was entitled to draw a month's pay in advance on producing: viz. An 'Advance Note' and/or Half Pay Allotment payable to his wife (sweetheart). When this payment was due the loved one would wear white hose to mark the occasion. But it would seem to me that this custom may have prevailed long before the date named, and to pursue the subject further I would refer the questioner to files of the East India Company. It may be of interest to add that in conjunction with this event ashore, it was celebrated afloat by the seamen at the end of the first month at sea on what was termed 'Dead Horse Day'.

On this day and in the Dog Watch, the crew would form a procession. With it they would drag an effigy of a horse mounted on a gun carriage or sleigh and come to a halt at the break of the poop, and all the time singing a shanty; the words of which are as follows:

'They say ole man that y'er 'orse must die.' *Chorus.*
'And they say so. And I 'ope so.'
'They say ole man that y'er 'orse is dead. Oh! poor ole man.'

A *post-mortem* was held on the spot by the ship's 'doctor' (cook) who, after some mimicry would pronounce the horse 'dead'.

The horse, mounted by a seaman, was then hoisted to a nearby yard arm, to the tune of more singing.

At a given moment, the rider would cut the horse adrift and the next moment—mid much rejoicing—the crew would watch the dead horse as it floated astern and lost in the ship's wake so ending what was termed 'working off the dead horse' and the beginning of a new day from which pay begins to the end of the voyage. The rest of this old time ceremony ends in a tot of strong 'likker' handed out from the after-guard.

It would be interesting to have other views of White Stocking Day and working off the Dead Horse as these here recorded are from hear-say of the over-sixties shipmates of mine more than 65 years ago.

W. S. DAVENPORT

44. (1955.) EVOLUTION OF THE KNÖRR. Some details asked for in Sir Alan Moore's query can be found in *The Viking Ships*, Brøgger and Shetelig, distributors Edward Stanford Ltd London.

Kvalsund ship. Number of oars 20, length 17 ft. Extreme length about 59 ft. Breadth 'rather more than 9′ 10″.' 'Not very deep-drawing, only about 2′ 7″.' The number of strakes is not mentioned, but as far as I can tell from the photograph of a model in Bergens Museum probably 7 or 8.

Gokstad ship. Number of oars 32, length 17 ft. to 19 ft. Extreme length 76′ 6″. Breadth 17′ 6″. 'The height from the bottom of the keel to the gunnel amidships is 6′ $4\frac{4}{5}$″.' Her draft amidships $33\frac{1}{2}$ in. Total number of strakes 16. The first 9 (below the waterline) all 1 in. thick, the 10th (where the beams rested) $1\frac{3}{4}$ in., the 11th, 12th, 13th all 1 in., the 14th $1\frac{1}{4}$ in. (the oar holes were in this), 15th and 16th $\frac{7}{12}$ in. (the gunnel along the top one was $4\frac{1}{2}$in. by $3\frac{1}{12}$ in. The joins are said to be by butts, but it appears that 'laps' is intended, each had '3 nails across of which the two on each side were driven through the adjoining strake'.

There are no dimensions given for the knörr.

P. CLISSOLD

45. (1955.) SHIP *LINTIN*. This ship was bought by Thomas Royden, shipbuilder of Liverpool, in 1848, and sold by him in 1852 to J. Smith of Sunderland. The price paid for this vessel of 553 tons was £3800.

Probably Thomas Royden found the ship in bad condition, and as he may have been at that time short of orders for new tonnage took her over, carried out all necessary repairs and then managed her until trade was better and then sold her.

The *Lintin* first appears in Lloyds Register book in 1846–7 and shows that she was built in Sunderland in 1834. In 1846–7 she was owned by Barton and Co., Liverpool.

From 1848 to 1852 in Lloyds Register book it appears that the owner was George Kendall of Liverpool. Thomas Royden's name does not appear, but if he held any or all of the shares his name would be entered in the Customs Register of Liverpool, even if he held the shares for only a short term, as this was required by provisions of 1786 and 1823. George Kendall was a friend of and very well known to Thomas Royden who had built five ships for him.

E. B. ROYDEN

3. (1956.) LISTS OF WOODEN MEN-OF-WAR. Commander Rupert-Jones, with whom I was associated for a number of years before his death, complied his 'Navalis' and had it typed in quadruplicate. One copy came to me and I kept it up to date, including the war years. After the war I began to retype it in a simplified form and this work was completed last year. One copy of this is in the Admiralty and the other in the National Maritime Museum. My own copy is still kept up to date.

Commander Rupert-Jones never published his 'Navalis', except in bits. The lists he published in *Notes and Queries* were, I think, arranged in places of building though there was one article on the early steamships of the Navy.

The 'Navalis' is in alphabetical order and lists the names of all ships of the Royal Navy whether hired or permanent. Naturally the list is not complete but I know of nothing to compare with it. Mr Carr Laughton looked after my copy for two years during the war and told me that there was much in it that they had not got in the Admiralty library. On the other hand, there is also much in the Library which is not in 'Navalis'.

T. A. MANNING

4. (1956.) BOUNCING CANNON BALLS. The aeroplane in 'The Dam Busters' had a fixed target and used low-level precision bombing, to produce an underwater explosion, in ideal conditions. Nelson's targets were ships at sea and if he could 'bounce' a cannon ball in such conditions he could probably only use one gun deck. I thought a 'bouncing' cannon ball was a better theatrical comparison, perhaps, to describe the path of the bomb over water in the film than the game stated in the book.

F. J. PATEMAN

5. (1956.) ROYAL NAVY, RETIRED. The instructions in the Office of the Naval Secretary to the First Lord of the Admiralty were that 'Royal Navy' was only to be inserted after the name in the case of Commodores and below. In the case of Commodores this was to differentiate between Commodores, Royal Naval Reserve, and Royal Naval Volunteer Reserve.

'Retired' was never used in the case of officers no longer on the Active List.

Admirals of the Fleet of course remain on the Active List for life and so the question of 'Admiral of the Fleet Sir Hercules Jones, Retired' does not arise.

T. P. GILLESPIE

5. (1956.) ROYAL NAVY, RETIRED. I enclose extract from the Annual Report of 'Association of Retired Naval Officers' (A.R.N.O.). This is reprinted each year in the annual reports.

Use of the word 'Retired' after officers' names.

For the benefit of new members, we reprint here the Admiralty ruling on this point which was first issued as a Fleet Order about 1930.

'Once an officer has held a Commission in the Royal Navy he always belongs to the Royal Navy unless dismissed by order of Court Martial, and it is incorrect for him to be addressed or to style himself "Retired".'

The term could, they said, be properly used only in official documents in which the fact that the officer was on the Retired List was pertinent.

This remains substantially true to-day, but the Admiralty leave it to individual officers to use the term themselves when it is pertinent. For instance, a retired officer must use it when writing to the

Press because editors know that Admiralty approval is required before letters from serving officers can be published. It is also pertinent, of course, when applying for a job.

A.R.N.O.'s address is 7 Mansfield Street, London, W. 1. A. L. FLETCHER

8. (1956.) Unanswered Queries. Captain E. K. Thompson brings up the subject of unanswered queries. I remember several years ago there was a query why was a steering wheel mounted upon the tiller peculiarly appropriate in a whaler and, as I remember no answer, I will attempt to furnish one.

I do not think there was any reason, as I have been told that before quadrantral steering gear was used, such wheels were very common in small American vessels of all sorts. Evidently, too, they were not confined to American vessels as E. W. Petrejus in his book *Model van do Oorloogsbrik Irene* mentions their use in Dutch ones. I never heard any virtue ascribed to them save economy of space—they were used where the counter did not have enough overhang to lead the tiller aft and where the presence of a cabin trunk or something of the sort did not afford sufficient room to place wheel and binnacle before the tiller.

I have seen a picture of one in a modern book where the tiller rope leads directly from the barrel of the wheel to the blocks at the side. I doubt if they were ever so rove as the consequences would have been:

(*a*) An overturning moment on the wheel stanchions which on account of their necessarily narrow base they were ill capable of resisting and which, had they resisted it, would have produced a torsional moment in the tiller.

(*b*) A moment in a plane through the axis of tiller and pintals bending the tiller down towards deck.

(*c*) The turns of the tiller about the barrel of the wheel would have rode over each other and separated as the helm was put hard over.

In the one or two cases of such wheels I saw in my boyhood and in Mr Petrejus' fig. 162 the tiller ropes lead vertically downward from the barrel through checkblocks on the sides of the tiller, forward (aft in Mr Petrejus' figure) through blocks in eye bolts at end of tiller, *then* over to the blocks at the side. I suspect they were always so rove as all the above-mentioned disadvantages were thereby avoided.

Men who had steered with such wheels told me they were maddening to use until one got the hang of them and ever inconvenient. They could only be used in vessels with little or no rake to the sternpost. D. L. DENNIS

REVIEWS

The Mariners' Mirror. General Index to Volumes 1 to 35. Compiled by R. C. Anderson. Price 10*s*. 6*d*. to Members and 15*s*. to non-Members.

This is a completely new index compiled by the President of the S.N.R. after four people had tried their hands at it. It takes us up to 1949, the end of the war.

Each volume has had its own index hitherto. These, owing to the different interests of their compilers, have not been equally useful.

The new index is handsomely produced to match a number of the *Mariner's Mirror* with cover, title-page and fly-leaf.

It is in two parts with double columns. Part I, the general index, contains 82 pages. Part II has 94 pages and is devoted to ships' names. This simple division and liberal cross-references make search easy. Thus under 'Laughton, L. G. C.', stands 'The Rank of Commander, R.N.', with the author's other articles, and under 'Commander, rank of' a reference to the volume and pages of the article.

A critical survey of some wishful thinking is to be found under 'Abingdon masts', under 'Anderson, R. C.', 'Horrocks, J. W.' and under '*Mayflower*', the last in Parts I and II. A few other ship-names qualify for both parts.

The general index, tested by looking up words in back numbers, is remarkably thorough. Perhaps 'Armed Ship' (I, 162, July), meaning a merchantman hired by the Admiralty and given a rating equivalent to a sloop, might have been included because, though the term is given in marine dictionaries, current examples, as in the reference, are not so easy to find.

Under 'chain defence (harbour)' no reference is given to W. L. Wyllie's note 'Capstan Yard' (VIII, 152). The note is given but a reader might not know from its title what it was about, viz. a chain defence at Portsmouth. 'Cockbilling yards on Good Friday' is to be found under 'A-cockbill'.

These and other minor omissions merely show that the old indexes may repay looking at if a word cannot be found with the new one but this will be seldom.

There are very few misprints. Dr Anderson has kindly pointed out 'Lloyd's patriotic funs' for 'fund' and 'Timone all', for 'alla', 'Portuguese'.

Under '*Mayflower*' in Part II the references to Vol. VI are given as to Vol. VII, but since correct references to Vol. VII follow no one is likely to go astray.

The index points to a great deal of hard work. The compiler has put the society over which he presides more than ever in his debt.

ALAN MOORE

North Atlantic Seaway. By N. R. P. Bonsor. T. Stephenson and Sons Ltd. Prescot, Lancashire. $8\frac{3}{4} \times 5\frac{3}{4}$ *inches*, *illustrated*, 638 *pages*. Price 57*s*. 6*d*. net. (U.S.A. and Canada, $8.50.)

The author describes his book as 'an illustrated history of the passenger services linking the old world with the new'. It is primarily a book of reference, recording the history of every company that has operated a steam or motor passenger service across the North Atlantic, with details of their ships. An enormous amount of work must have gone into its compilation.

The book covers the period from 1819 to the present day; that is from about the date of the first passenger steamships (really sailing ships of about 300 tons with auxilary engines) to the time of the giant liners of over 80,000 tons now on this service. At the beginning of the period most passengers travelled under sail; nowadays more people cross the Atlantic by air than by sea. This is therefore an appropriate time for such a review to be produced, telling as it does the story of the great development of power-driven ships on the busiest and most important passenger trade route in the world.

Each chapter (and there are no fewer than 182 of them although some are small; only a page or less) deals with a steamship company or a ship. The chapters are in chronological order, starting with the American auxiliary wooden steamer *Savannah* built in 1819. There is also an alphabetical list of steamship companies. In the individual chapters particulars are given of the formation of each company; its nationality, its history and any outstanding events in the design or the performance of its ships. Great companies such as the Cunard Line formed in 1840, which has had 114 ships on the service, and the North German Lloyd of 1858 with 109 ships, naturally occupy a good many pages. The chapters on other and less well known companies, some of which had a relatively short existence, are also of interest. For instance the Guion Line, 1866 to 1894, was a most enterprising concern. It put into the Western Ocean passenger service the first ships to be nicknamed 'greyhounds of the Atlantic'; ships which as long ago as 1882 made the crossing in less than seven days.

With the history of each company there is a list of its ships, giving in abbreviated form particulars such as the date of her maiden voyage on the North Atlantic, her gross tonnage, dimensions, type of bow, number of funnels, number of masts, type of stern, construction (wood, iron, steel), propulsion (paddle, screw, twin screw), type of engines, service speed and name of builder. Companies' house-flags and funnel markings are also described.

There are over thirty pages of an alphabetical index of more than 3000 individual ships. It contains thirteen named *America*.

The book contains over fifty photographs of famous ships, past and present, including a hitherto unpublished one of the *Great Eastern* and one showing the three giants *Normandie*, *Queen Mary*, and *Queen Elizabeth* alongside adjacent piers at New York in 1940. Not the least attractive feature of the book is Appendix A, 'The Changing Silhouette', containing 150 excellent scale drawings of typical ships throughout the ninety years, all of them to the same scale, from the *Royal William* of the year 1833 to the *Belgenland* of 1923.

Appendix B gives a list of 194 shipbuilders past and present mentioned in the fleet lists. Appendix C is a list of record passages, westbound and eastbound, from the eighteen days in 1838 to three days ten hours in 1952. Another interesting list is in Appendix D, 'Firsts and Lasts', This shows that as far back as 1838 the first condensers were used, the first watertight bulkheads fitted and the first two-funnelled steamer put into service. In 1850 the first steam-heating for passenger accommodation was installed. The first electric lighting was in 1879 and the first ship to shore wireless telegraphy at the turn of the century.

A list of the North Atlantic passenger services operating in 1955 is given in Appendix E. It is surprising to learn that there were twenty-seven of them; most of us would be hard put to it to name a dozen.

It has been said that 'communication is civilization'. The ships of the Atlantic ferry have certainly played and are playing a great part in world progress. The stormy North Atlantic ocean does not divide, but unites peoples. In reviewing a book one hesitates to use superlatives because so much nowadays is described as 'gigantic', 'stupendous', 'colossal' and so on, but in writing of Mr Bonsor's book some such terms can hardly be avoided. It is a monumental piece of work.

The reviewer has only one slight 'moan'. It is that in several of the photographs the ships are too cramped for space; in some cases with parts of their bows or their sterns cut off by the edge of the page.

C. H. WILLIAMS

The Roanoke Voyages, 1584–1590. Documents to illustrate the English Voyages to North America under the patent granted to Walter Raleigh in 1584. Edited by David Beers Quinn. Hakluyt Society (Second Series, no. civ). 1955. 2 volumes. xxxvi + 1004 *pages*; *maps* and *plans*. £6.

The story of Raleigh's North American colonies is less well-known in England than it deserves to be, perhaps because the story itself is complicated and in many respects obscure. The texts first published by the younger Richard Hakluyt, in his 1589 edition of *The Principall navigations, voiages and discoveries of the English nation*, though providing the main substance of our knowledge of the events, do not by any means constitute a clear narrative. Other materials, appearing at the time or since, have thrown light upon many of the obscurities, but the accumulation of relevant information in the last hundred years has vastly complicated the whole subject. Modern archaeological and biographical techniques have been brought to bear upon the story itself; the contributions of Thomas Hariot and John White have been subjected to detailed study, not merely for their importance in the planting of the colonies, but as landmarks in the history of English natural science, cartography and painting; new categories of historical evidence—notably documents from Spanish sources and from the English High Court of Admiralty—have greatly increased the sheer weight of facts available; the geography and natural history of Raleigh's Virginia and the language and social customs of the Algonkian Indians have practically become fields of study in their own right.

The time was ripe, therefore, for the publication of these two volumes, which bring together and subject to close scrutiny most of the relevant source material. Professor Quinn has republished *verbatim*, for the first time, the Hakluyt texts and adds not only nearly all the other known documents (some of which have never been published in full before), but also a solid mass of hitherto

unpublished material, much of it discovered by himself. These 159 documents he has annotated with scrupulous and indefatigable scholarship. Further, he has provided us, by way of introduction, with an authoritative critical assessment of the materials and with a lucid narrative running throughout his first ten chapters. Appendices are included, dealing with the geography, the archaeology and the language of Raleigh's Virginia (the last-mentioned being contributed by the Rev. James A. Geary of the Catholic University of America), and a list of sources constitutes a fourth appendix. A new catalogue of John White's drawings, the compilation of which must have presented some really knotty problems, is also included, and is particularly to be welcomed as a commentary upon the history of the first colony (1585–6). Professor Quinn has undertaken a formidable task in co-ordinating this large body of varied and often highly specialized knowledge; he has nevertheless triumphantly succeeded and a clear picture of the sequence of events, the difficulties and the significance of the enterprise emerges.

It is perhaps obvious that the Roanoke voyages affected and were closely affected by the course of the war with Spain. Nevertheless, we owe the thorough investigation and development of this thesis to Professor Quinn. He has traced the influence of Anglo-Spanish relations upon the publications concerning Virginia during the last eighteen years of the century and we are thus provided with the most important clue to the inadequacy of much of the material published before 1589 and to Hakluyt's performance as an editor. He has shown that in the 1585 venture the primary intention—to establish a privateering base in North America—was perhaps a part of a more or less co-ordinated strategic plan of attack upon Spain, a plan embracing Drake's greatest West Indian raid and the destruction of the Spanish fishing fleet at Newfoundland. The Spanish reaction to this English threat to their Empire helped to determine and define the 'Enterprise of England', and it was this which preoccupied the government and leading men of England in 1587 and 1588, while the colonial venture faltered and failed for lack of support. Further, the link between colonizing and privateering not only caused the Spanish reaction in Florida itself to be sharper than it might or need have been, had the plate fleets not been threatened, it also contributed directly to the collapse of the colony, since privateering proved to some a more attractive pursuit than settling among hostile Indians, searching for lost settlers or financing expensive and apparently unremunerative expeditions to North America. In much more detail and much more convincingly Professor Quinn has consistently kept an eye on the exact historical context of the particular events with which he is concerned, relating the tragic story of Virginia to the larger drama of the war.

Among much that deserves comment, the tenth chapter, which describes the last voyage of John White in 1590 and his fruitless search for the lost colonists, stands out. The greater part of the material for these 138 pages is new and consists of extracts from the Admiralty Court records. The editor has handled this refractory and unpromising material in such a way that it becomes not merely comprehensible, but fascinating for its first-hand evidence of the details of sea venturing in the period of the Armada. Particular mention should also be made of the excellent collotype reproductions of White's maps of Virginia and of the end-paper map of Raleigh's Virginia. The latter is the product of the collective work and advice of experts, and of a visit to the Carolina Banks, the geography of which has considerably changed since Elizabethan times. Sections of the U.S. Geological State Survey Maps have been used as a basis and overprinted with a reconstruction of the sixteenth-century coastline and nomenclature, taken from John White's maps and narratives. A detailed discussion of the cartographical problems is given in the form of an appendix to the book.

Professor Quinn has already edited for the Hakluyt Society two volumes of documents concerning the voyages and colonizing enterprises of Sir Humphrey Gilbert; the present work constitutes a kind of sequel to this; and a further volume or volumes on English North American ventures down to 1605 is now in preparation, which will complete, for the time being, the documentation of the embryonic stage of the British Empire in North America. It would of course be absurd to expect finality in historical research; already documents which might have been included in this book have been discovered since it went to the press; indeed it is hoped that the effect of thus drawing together what is known may be to give added stimulus to ideas and research in this field, since the editor has indicated more questions than answers. Whatever the result, there

can be no doubt at all but that this book is the greatest landmark in this field of study since 1589, and is likely to remain so for a long time to come. Scholars must take it as their starting-point for further investigations and as their main work of reference on topics connected with the Virginia ventures. Other readers will find in it all the fascination of first-hand reports and accounts, journals and court records, presented as far as possible in their original form.

K. R. ANDREWS

NONE BUT THE BRAVE. By FRITHJOF SAELEN. Souvenir Press, Ltd. Translated by KATE AUSTIN LUND. 1955. $8\frac{1}{2} \times 5\frac{1}{2}$ *inches*. 16*s*.

The subtitle of this fascinating book is in itself an eye-opener: The Story of 'Shetlands' Larsen, C.G.M., D.S.O., D.S.C., D.S.M. and Bar; and the award of this unprecedented chain of British honours to the young Norwegian Leif Andreas Larsen is justified up to the hilt.

Escaping from Norway in 1941 with a handful of companions in a fishing smack, a 'little nutshell of a boat', 'thirty-five feet of Norwegian craftsmanship' with a 'ten horsepower motor', Larsen was soon selected as an eminently suitable recruit for the Shetlands Gang, which made raids to convey agents, arms and the like into Norway and to bring away refugees when possible, throughout the period of enemy occupation. The vessels employed on this dangerous mission were necessarily exiguous, frequently makeshift and on at least one occasion purloined from an unknown owner under the very noses of the Germans. The men who manned them were selected for their proved qualities of patriotism, seamanship and endurance and their acquaintance with the intricacies of the southern Norwegian coast; and they proved themselves the very salt of the earth.

Of the fifty-two trips across the North Sea and back that Larsen achieved in less than four years only the high lights, of course, could be related in the fourteen chapters of this book; and a breath-taking narrative it is. The tale of the laying of mines off Kristiansund in foul weather from a barely seaworthy vessel which foundered shortly afterwards makes terrible reading; but there is far worse to follow. On Larsen's 'first voyage as skipper' he crossed in the sixty-foot *Arthur* through 'the worst storm for forty years'; the appalling story is told in page after page of harrowing, yet perfectly restrained, writing; and Larsen's own account at the end was that they 'were five days at sea in heavy weather'.

Perhaps the greatest episode was that of Operation Title, whereby it was proposed to deliver a crippling attack from the *Arthur* upon the battleship *Tirpitz*, immobilized up the Trondheim Fjord. The failure of this hazardous attempt, after almost every obstacle had been surmounted, was due to no fault of those engaged in it: it obliged them, none the less, to abandon and scuttle their ship and to undertake the journey across the snow-covered mountains into Sweden. They can hardly have hoped to succeed; yet, despite every conceivable privation, they won through with the loss of but one of their number.

But the finest tale in this remarkable epic is that of the fight put up by the *Bergholm* against two twin-engined seaplanes, which were obliged to retire in damaged condition, but left the ship in a sinking condition and most of her company seriously wounded. The survivors traversed 130 miles of hostile waters in a little lifeboat which had been holed seven times by the enemy's shells, landed on Norwegian soil and were even then harried from pillar to post by the implacable German pursuit.

Yet Larsen was still spoiling for more: his intrepidity never flagged.

The story is admirably told, with no straining after effect; and the translation, into homely plain English for the dialogue and dignified prose for the narrative, is in general impeccable, so that one is surprised to find 'lens' treated in one place as a plural. But there is no finding fault with this book. It is a sober, absorbing account which grips and holds the reader from start to finish; and the illustrations (too few, alas) are excellent.

T. C. GERMAIN

A Handbook of Sailing Barges. By F. S. Cooper and John Chancellor. Published by Adlard Coles, Ltd., Southampton. $5 \times 7\frac{1}{2}$ *inches*; 112 *pages*; *illustrated*. Price 12*s*. 6*d*.

To all lovers of mast and sail, the passing of wellnigh all commercial sailing craft from our coastal waters is a matter of nostalgic regret.

The many beautiful craft that once sailed in such numbers out of every port from Penzance to the Pentland Firth have vanished never to return. All that remains to us now is a few, alas a very few, of those handsome and fascinating little ships, the Thames and Medway sailing barges. The most picturesque, and, in their heyday, 40 years ago, perhaps the most efficient and economical of all coastal and riverine sailing craft.

Capable of carrying 130 tons of cargo, on a draught of 3 or 4 ft., of passing under river and Canal bridges, and worked by a crew of two men, they must have represented almost the cheapest form of sea-borne transport known.

Nor were their activities confined to the comparatively sheltered waters of the Thames Estuary and adjacent rivers. They could be met with North to the Shetlands; West to Ireland; and East to the Rhine and other European water-ways.

Some even have made their way across the Atlantic to the River Plate.

As for their beauty and elegance, to know them, as every Thames or Medway sailor knows them, is to love them.

I know of no braver sight than a squat coastal barge under full sail, in racing trim, roaring up the Swin in a hard breeze on a flowing tide.

It is of such ships that this little handbook deals most lucidly and interestingly. From their history and evolution, down to hull construction, masting, rigging and maintenance, the reader will find everything he needs to know, as well as valuable hints on handling.

The illustrations by Mr Chancellor are quite excellent, admirably drawn, and so clear and intelligible as to be readily understood by anyone.

A. MACDERMOTT

China Tea Clippers. By G. F. Campbell, A.M.I.N.A. Adlard Coles, Ltd. 1954. $5\frac{1}{2} \times 4\frac{1}{4}$ *inches*, 80 *pages*; *fully illustrated*. Price 6*s*. 6*d*. net.

This is one of the smaller of the well-known 'Ship Series' of books which this publisher has been producing in recent years. It deals with the ever-popular subject of the Tea Clippers, and in spite of its small size covers the subject in a very comprehensive manner. The earlier chapters give a brief history of the tea trade, the development of the clipper ship as a type, and a comparison of the various ships involved, with their dimensions and passages. The remainder of the book is full of details showing the construction of the ships, their rigging, and their sails. Wooden, composite, and iron hulls are carefully described, and considerable space is devoted to deck fittings, and the various deck arrangements adopted in different ships, special attention being given to the layout of the poop. Masts and spars are described in similar careful fashion, with clear drawings of the various parts and fittings. The difference between wooden and iron spars is described and illustrated. To make things still more clear a set of plans of a typical but imaginary clipper is given, including hull lines, inboard works, deck plans, spar and sail plans. We think the author would have done better to illustrate an actual ship, but that is entirely a matter of opinion. The builder of ship models will find this an extremely useful book, as will also the student of naval architecture. The author is a practising Naval architect, and a ship model maker, and has built up a considerable reputation as an illustrator of maritime books. He is thus better qualified than most to write such a book as this, and right well has he risen to his opportunity. The book is adorned with some rather delightful wash drawings of clippers under various conditions. Altogether we must congratulate both author and publisher on a very fine little book.

E. BOWNESS

Flags of all Nations, Vol. I. London: Her Majesty's Stationery Office. 1955. $7\frac{1}{2} \times 10$ *inches*, 182 *flags*. Price 70*s*. net.

Although editions were issued in 1916 and 1930 the Admiralty Book of *Flags of All Nations* has not hitherto been revieved in this *Journal*. The late D. Bonner Smith, Admiralty Librarian and an honorary vice-president of our Society, discovered a manuscript book entitled *Royal and Signal Colours, &c.* (1702 to 1837) which he virtually coerced me into describing for the *M.M.* (1951, p. 143, and 1952, p. 53). As I pointed out, that book was evidently the direct precursor of *Flags of All Nations*. At first the title of the series was *Drawings of the Flags in use at the present time by various Nations*, and originally the work was the product of a Naval Stores official, for the guidance of persons making flags for the navy, and indeed the plates and amendments for the earlier volumes were headed 'N.S.', meaning that they were to do with the Naval Stores department. In course of time the sheets were as often headed 'N.L.' to denote Naval Law department, showing that the book was then as much concerned with politics as with stores. The latest edition now reviewed is the work of 'N.L.'

The most recent edition of *Flags of All Nations* had been in 1930, and that had been brought up to date as far as possible by Amendments nos. 1 to 7 between 1931 and 1948. Noticeable differences between the 1930 and 1955 editions are to do with format; the new book is a loose-leaf quarto instead of octavo, and bound in green in place of the usual naval blue. For the first time the words 'Drawings of the' have been dropped. The greatest innovation, however, is that the new work is going to be so large that it will be in three volumes; Vol. I contains National Flags and Ensigns; Vol. II, Standards of Rulers, Sovereigns and Heads of States, flags of Ministries and Officers of the Services; Vol. III, flags of Public Bodies, badges of Colonies, Public Departments, etc. Memoranda about the Union Flag and the three naval ensigns, and extracts from *K.R. & A.I.* have been omitted, and in their place there is a novel schedule entitled 'Identification of National Flags' taken in order of their compositions in horizontal bars, vertical stripes, crosses and so on. This scheme was originally introduced in Mr E. H. Baxter's book on *National Flags* published in 1934, and its use in a plentifully illustrated book is not obvious.

The body of the new book starts off with the flags, each to a page, of United Nations, N.A.T.O. Mouvement Européen and the Assembly of the Council of Europe. It is impossible in the space at one's disposal to describe all the numerous national flags that have sprung up since 1930, and to observe the few that have not undergone some change. A very pleasing restoration, however, does deserve special notice: Spain, after her experiment in anti-royalist colours, has now adopted the pre-revolution design of a yellow ground having a broad red stripe at top and bottom; plain, it is the ensign of the mercantile marine instead of the old flag of five yellow and red bands; it can occasionally be seen during a walk across London Bridge. With the addition of the national arms near the head it is the national flag and naval ensign. The most beautiful and harmonious designs of modern times are the jacks of Spain and Italy of the new régime, both quite square (as is proper) and each with provincial arms in separate quarters, such as Castile and Leon, and Venice and Genoa.

The most significant changes show the break up of what was once known as 'The British Empire', with the national flags of Ceylon, India, Pakistan and South Africa lending their designs to seagoing ensigns. For the benefit of naval readers it may be as well to describe some of the most notorious flags that are being flown by men-of-war in the new scene. For Ceylon the naval design is as follows: a white ground having a crimson cross, and instead of the Union Jack in the canton, a replica of the Ceylon national colours, namely a yellow 'frame' containing, first, a green and a saffron vertical stripe, and second, a yellow Sinhalese lion holding a sword on a crimson field. India retains most connexion with the Royal Navy, the jack of the White Ensign being simply replaced by the Indian colours, saffron, white, green in horizontal bars with the Chakra in the centre. The Naval Forces ensign of the Union of South Africa is a hideously unsuitable design; a very broad cross of 'tartan green' on a white ground, its upright arm being one-third nearer the hoist instead of central; in the canton, the South African composition consisting of horizontal bars

of 'deep yellow', white and blue, with the three miniature flags inset in the centre. Observing that the Afrikaner countries of the Transvaal and Orange Free State have no coast line, and that the sea-board is contained in the one-time British part of the Union, Cape Province and Natal, the emphasis on Afrikaner colours and the repudiation of any connexion with the Royal Navy, show this flag to be the most humiliating of any of the 'Commonwealth' ensigns.

It is a pity, for several obvious reasons, that our late member Cecil King is not alive to write this review; he would have had some pithy remarks to make about the sheet of 'Shades and Pattern Numbers of Admiralty Bunting'. It is a curious thing that the various tints of glue used in bunting should always prove so troublesome. If they are not too pale, then probably they are too dark. Great Britain is the worst sufferer from these difficulties. There are two grounds for comment; first the difficulty of portraying on paper the shades of bunting as they appear in actual fact; the number of different tones is necessarily limited for it would be impossible to reproduce every shade in use by the numerous different nations. The other grounds for criticism is the fact that the book of *Flags of All Nations* lays down for the contractors who supply the material, certain colours that are not suitable or handsome enough for British ships. In the schedule the shades of blue bunting given with their pattern numbers are, *azure*, *intermediate*, *royal* (and merely) *blue*. The last two in this table are almost indistinguishable and both are what ladies call 'navy', and are in fact about the hue of naval officers' and ratings' uniforms. In a flag they look practically black, and it is difficult to know why these dark sombre colours should be used when a true royal blue would be far more appropriate and beautiful. Moreover, quite apart from national emblems, the blue bunting used for signal pieces ought to be bright so as to distinguish it from black.

Now to take in turn the four blues in the book, and by comparison with the shades laid down by the British Colour Council (the final arbiter in matters of this kind), and see how they fit with the actual blues of foreign countries. Argentine comes first with what the man-in-the-street would call *Cambridge* blue; the B.C.C. lists it as *powder blue*, and the Admiralty *azure* may be near enough. Next there is Sweden's dazzling colour, known by Cecil King as a mixture of cobalt and cerulean, and by the B.C.C. as *spectrum* blue; it is certainly brighter than the Admiralty *blue intermediate*. Afterwards comes the blue used by Netherlands ships which the ordinary person would describe as *royal* blue, not so pale as *blue intermediate*. A walk across London Bridge would probably reveal a small Dutch coaster flying a clean ensign whose blue is fine and bright.

So far as I can see, for national and signal flags only three blues would be necessary in this book; (*a*) *azure*, *powder* or *Cambridge*, for the Argentine and others similar; (*b*) *spectrum* or *cerulean* for the ships of Sweden and perhaps Greece, and so on; and (*c*) the *royal blue* of the B.C.C. and the ordinary man, for ships such as the Dutch, and for all British purposes including the Union Flag, the Blue Ensign and signal flags. The two patterns T 814 and T 815, which in fact approximate to *navy*, could be abolished.

Like so many Stationery Office productions this Admiralty book of flags is extremely cheap at £3. 10*s*. when one considers its size and splendid workmanship. Although few individuals can afford to have it owing to its cost and bulk, it is essential that it should be available in municipal, county and borough libraries as well as in the various Service institutions and maritime museums.

(I acknowledge with many thanks the advice most courteously given by the British Colour Council.)

H. P. MEAD

The Boarding-Bridge of the Romans. By H. T. Wallinga, Groningen/'s-Gravenhage, 1956. 5 × 7½ *inches*; vii + 96 *pages*; 9 *plates*. 8.90 Dutch guilders.

In solid volumes published in 1946 and in 1954, Professor J. H. Thiel has himself made very notable contributions to the study of Rome's reluctant assumption of sea-power in the Republican period. This new work by one of his students testifies that he is no less stimulating as a teacher than meticulous as a researcher. Dr Wallinga has squared up gamely to one of the great problems of

classical naval archaeology, the nature of the device by which the Romans were able to win the critical sea-fights off Mylae and Ecnomus. He discusses very fully and fairly various reconstructions of the machine put forward by seven distinguished scholars over the last 300 years, and draws attention to fatal defects in each. He then proceeds to give an ingenious reconstruction of his own which certainly does not do violence to the text of the crucial description in Polybius, and which the present writer must admit to finding both plausible and convincing.

Dr Wallinga illustrates a 'working-model' which he had made, and some may regard the simplicity of his reconstruction as one of the most satisfying arguments in favour of his theories. One hastens to add, however, that he has also behind him the whole weight of the Dutch classical education, and when he ventures to criticize a translation he does not have to destroy the validity of his criticism by a confession of his ignorance of the language in question. Indeed if any complaint may justly be made of this new contribution to the discussion of an old problem, it is that in its form and arrangement the monograph smacks just a little too much of the nineteenth-century continental dissertation. The author's English is considerably more than competent, but one could wish that he had had the courage to jettison completely the metric system. For the type of calculation employed, two pounds is near enough the equivalent of a kilogram, and a yard for a metre, while a phrase such as 'displacement of about 250 m.3' is baffling enough for the English reader without the addition of a small 4 immediately after the 3 to indicate a footnote.

For good measure Dr Wallinga discusses at considerable length the historical background against which the use of the so-called *corvus* must be set. Inevitably there are points of detail where not all will agree with his every word, but the reader can at least feel that justice is done both to the realities of practical seamanship and to the niceties of *Quellenkritik*. There can be no doubt but that this exhaustive discussion will be the point of departure for any future discussion of the *corvus*, but one does wonder whether there will be a future discussion—unless of course one of Dr Wallinga's protagonists should be moved to shiver another lance in defence of one of the rejected reconstructions. Except in that event, there is perhaps a real danger that most text-books will quietly accept the new theory as self-evident and reproduce it without acknowledgement. This would be a pity, but it is to be hoped that the threat may spur Dr Wallinga to fresh excursions into other fields of classical naval archaeology. If Professor J. S. Morrison's admirable paper in *The Mariner's Mirror* has really solved at last the problem of the trireme, there is still room for a full-dress study of the quinquireme, and one is encouraged to hope that Dr Wallinga, with his happy combination of the outlook of the practical seaman *and* of the scholar, may one day attempt a badly needed revision of Admiral Rodger's readable and often most illuminating surveys of Mediterranean naval warfare between Salamis and Lepanto. The present monograph certainly does suggest that he is admirably qualified for that task, and the reviewer, slightly guilty about his own present preoccupation with problems of quite another order, would be only too happy to put at his disposal the *membra disjecta* of his unfinished study of the Byzantine navy in the tenth century.

R. H. M. DOLLEY

Voyage in a Barquentine. By Peter Roach. No. 32 in the Mariners Library. Published by Rupert Hart-Davis, London. $5 \times 7\frac{1}{2}$ *inches*; 272 *pages*. Price 9*s*. 6*d*.

Probably most members of the Society for Nautical Research have read at least one volume of the Mariners Library Series. The one under review is no. 32 and is about the voyage of the Barquentine *Cap Pilar* round the World in 1936 with a more or less amateur crew. The book is written by a member of that crew, who served as a seaman and is therefore complementary to the story as told by the captain, Adrian Seligman in his *The Voyage of the Cap Pilar*. The author was only 18 when he embarked on this voyage and only about four years or so older when he wrote this account. The introduction, written by the captain, says that Mr Roach did the actual work of writing the book while at sea during the Second World War in the Merchant Navy, when they were often under air attack or being stalked by submarines. Whatever was happening at the time of writing

certainly did not damp the author's spirits, and his book gives the very decided impression that he thoroughly enjoyed his experiences in sail and put up with the rough for the sake of the smooth. Whatever his previous knowledge of sailorizing may have been he evidently finished up a prime seaman, at any rate in spirit. The short description the author gives of his farewell to his ship and his refusal to leave her in any other place than Falmouth while she is still 'alive and happy, and not tied up in a dirty London dock' is proof enough of this.

This little book is nicely got up and well produced and very good value for its price of 9*s.* 6*d.*; in fact a credit to all concerned.

H. O. HILL

The Inexhaustible Sea by Hawthorne Daniel and Francis Minot. Macdonald and Co. 1955. $8\frac{3}{4} \times 5\frac{3}{4}$ *inches;* 239 *pages,* 25 *plates and Frontispiece.* 16*s.*

This is an American book published in England with the addition, apparently, of British photographs. Mr Daniel is, or has been, Curator of Printing and Publishing at the American Museum of Natural History, and Mr Minot Director of the Marine and Fisheries Engineering Research Institute of Woods Hole. It is a book written to spread a message—the authors regard the sea with its comparatively unexploited supplies of food as the answer to the problem of feeding an ever-increasing world population on the limited land resources of the earth. For the layman there is a clear and interesting description of the main movements of the oceans, the minerals, plant and animal life contained therein, and an outline of the progress so far attained in oceanography. The chapters on the habits of the main types of food fish and on whales are instructive to those who have a general interest in, but little knowledge of, these matters.

The authors are, however, inclined to be a trifle sweeping in some of their statements and this becomes apparent when they deal with nautical historical questions. It is not, for instance, generally agreed that the Greeks and the Romans 'were coasters rather than deep sea sailors and long passages across open water were almost always avoided'.

In another field, there is an apparent contradiction on pages 211 and 234 of this book with regard to the suitability of simple local fishing craft for the work they have to do. On page 211 it is stated that 'so suitable are many of the local types which have been evolved in the more primitive fishing communities that a simple improvement to their rig or the installation of a small and dependable petrol engine may be all that is necessary to greatly extend their range of operations and increase their daily catch'. On page 234 the authors say that many primitive fisheries employ the very crudest kinds of craft and 'would be greatly more productive if it were possible for them to replace their present boats with simple, inexpensive, easily constructed craft with better sailing, and sea-keeping abilities'.

The authors mention that in many parts of the tropics the introduction of a low-powered outboard motor in local craft 'could improve the dietary standards of whale communities'. Even if this should be economically possible, it is perhaps rather too broad an assertion. It is true that the F.A.O. have published the results of a survey of Karachi fishing boats and consider that these could be improved by auxiliary motors, and that investigation on these lines is going on elsewhere, but surely not enough work has yet been completed in a broader field for it to be possible to draw such general conclusions as the authors have done. Judging purely from personal observation, the problems in the way of introducing power in, for example, the sewn fishing boats of the Arakan or the fishing boats of East Pakistan, even should it prove technically feasible to do so, would seem very great, and the benefit to be derived therefrom not a foregone conclusion.

This book is, however, stating a case, and if some of its contentions are perhaps arguable this is certainly not to say that the main theme is without interest, or the book without value.

BASIL GREENHILL

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